THE LANCET

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 6366

No. III. of Vol. II., 1915.
No. 4794. Vol. CLXXXIX. LONDON, SATURDAY, JULY 17, 1915. Price 6d.

LIBRARY OF CONGRESS JUL 27 1915 PERIODICAL DIVISION

NEW B.P.

TWO TESTED BOOKS.

In the PRACTITIONER for July appear the following reviews:—

WHITE'S MATERIA MEDICA (14th edition, 6s. 6d. net): "*We have thoroughly tested it with a view to seeing whether it is brought up to date, and we have not found it fail us in any single instance.*"

LUCAS'S BOOK OF PRESCRIPTIONS (10th edition, 6s. 6d. net): "*We have tested the work thoroughly as to its comprehensiveness and the only matter in which it has failed us is in our finding no notice of emetin as a remedy 'per se.'*"

London: J. & A. Churchill, 7, Great Marlborough-street.

Now Ready. viii.+280 pp. Price 5s. net. With original Photographs and 143 special Prescriptions.

TREATMENT OF DISEASES OF THE SKIN.

By KNOWSLEY SIBLEY, M.D. Camb.

London: Edward Arnold, 41 and 43, Maddox-street, W.

FREYER'S ENLARGEMENT of the PROSTATE. With a Description of the Author's Operation of Total Enucleation of the Organ. A Work based on 800 Cases of the Operation. THIRD EDITION. With 54 Illustrations. Price 6s. net.

SURGICAL DISEASES OF THE URINARY ORGANS. With 141 Illustrations. Price 12s. 6d. net.

Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden, London.

MENTAL THERAPEUTICS.

(FAITH, MEDICINE AND THE MIND.)

By CHARLES REINHARDT-RUTLAND, M.D.

New Edition, with an Introduction by SIR OLIVER LODGE, F.R.S. Price 2s. net. (Cloth, 8vo, 300 pp.)

The Trade supplied by Simpkin, Marshall & Co., Ltd.

BY E. HURRY FENWICK, F.R.C.S.,

Consulting Surgeon to the London Hospital.

President Second Congress of International Association of Urology.

In Preparation. With 17 Plates and Text Figures.

URINARY TUBERCULOSIS

(ESPECIALLY OF THE FEMALE).

A Study in Clinical and Operative Surgery.

London: J. & A. Churchill, 7, Great Marlborough-street.

Now Ready. Pp. xi. + 269. With 3 Charts. 5s. net.

ON ALCOHOLISM: Its Clinical Aspects and Treatment.

By FRANCIS HARE, M.D., Medical Superintendent of the NORWOOD SANATORIUM, Beckenham.

"Marked by candour, common sense, and moderation ..... likely to become the standard text-book."—BRITISH MEDICAL JOURNAL.

London: J. & A. Churchill, 7, Great Marlborough-street.

Just Published. Eighth Edition. Demy 8vo. Cloth. 429 pages. 47 Illustrations. Price 7s. 6d. net.; by post 7s. 11d.

TEXT-BOOK OF FORENSIC MEDICINE AND TOXICOLOGY. (Late HUSBAND'S.)

By R. J. M. BUCHANAN, M.D., F.R.C.P. Lond., Professor in Forensic Medicine and Toxicology in the University of Liverpool.

E. & S. Livingstone, Teviot-place, Edinburgh.

BONESETTING and the TREATMENT of PAINFUL JOINTS.

By FRANK ROMER, M.R.C.S., L.R.C.P., and L. ELIOT CREASY, M.R.C.S., L.R.C.P.

Crown 8vo. 1s. net.

"Messrs. Romer & Creasy strip this branch of practice of the cloud of mystery and miracle which has been thrown around it by interested people and well-meaning, but ignorant supporters. They effectually disprove the foolish charge that the medical profession has wilfully ignored the subject, and they have dealt with it in an unprejudiced spirit. Moreover, they bear witness to the fact that the profession keeps an open mind as to everything connected with the treatment of disease and the relief of pain and physical disability, and is willing to learn from any source anything that may seem likely to be useful for these purposes."—BRITISH MEDICAL JOURNAL.

James Nisbet & Co., Limited, 22, Berners-street, W.

Pp. viii. + 262, with 51 Illustrations. Price 7s. 6d. net.

DISORDERS OF THE HEART.

By ALEXANDER MORISON, M.D., F.R.C.P., Senior Physician to the Great Northern Central Hospital, &c.

Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden, London.

By SIR LAUDER BRUNTON, BART., M.D., F.R.C.P., F.R.S., &c.

SECOND EDITION. ALMOST ENTIRELY REWRITTEN.

THERAPEUTICS OF THE CIRCULATION.

Small Foolscap 8vo. With 111 Illustrations. Price 5s. net.

"There can be few British medical men who are unacquainted with the author's lucid style and practical method of exposition. In this book they will find a sound and up-to-date account of the subject dealt with, and full descriptions of the various therapeutic measures employed in the relief of the symptoms of cardio-vascular disease. It may be cordially recommended to students and practitioners of medicine.'—THE LANCET.

"The subject is dealt with by a master hand."—THE PRESCRIBER.

John Murray, Albemarle-street, London.

NEARLY READY. With 150 Illustrations.

By CHARLES J. HEATH, F.R.C.S. Eng., Late Surgeon to the Hospital for Diseases of the Throat, Golden-square, London.

AURAL SUPPURATION:

ITS ARREST, WITH PRESERVATION OF THE HEARING.

The indications for performance of the Author's conservative mastoid operation.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Profusely Illustrated. Super roy. 8vo. 8s. 6d. net; interleaved, 9s. 6d. net.

AN INTRODUCTION TO SURGERY.

By Professor RUTHERFORD MORISON, M.A., M.B., F.R.C.S. Edin. & Eng., Prof. of Surg., Univ. of Durham; Coll. of Med., Newcastle-on-Tyne.

"Extremely suggestive ..... in our opinion Mr. Morison has been singularly successful. ..... It has a reason and character of its own."—LANCET. "We wish that every student could have placed in his hands this little work. ..... Even practitioners will profit by being made to see the great fundamental principles underlying their daily routine."—BRIT. MED. JOUR. Bristol: Wright & Sons Ltd. London: Simpkin & Co. Ltd.

Just Published.

DISEASES OF THE RECTUM AND ANUS.

By P. LOCKHART MUMMERY, F.R.C.S.

"This is a sound book and a practical one. These are its outstanding features. ..... To say that the work is practical is meant for high praise."—THE LANCET.

"We heartily recommend this book as a sound summary of the best practice in this department of surgery."—MEDICAL PRESS AND CIRCULAR.

Baillière, Tindall & Cox.

J. W. THOMSON WALKER, M.B., C.M.Edin., F.R.C.S. Eng.

SURGICAL DISEASES AND INJURIES OF THE GENITO-URINARY ORGANS.

880 pages, 24 Colour and 21 Black-and-White Plates and 279 Illustrations in the Text. Price 25s. net.

"Will hold its place for many years as the best English text-book on the subject."—BRITISH JOURNAL OF SURGERY.

Cassell & Co., La Belle Sauvage, London, E.C.

By FREDERICK J. McCANN, M.D.Edin., F.R.C.S. Eng., Surgeon, Samaritan Free Hospital for Women, London, N.W.

CANCER OF THE WOMB: ITS SYMPTOMS, DIAGNOSIS, PROGNOSIS, AND TREATMENT.

Fully illustrated. 20s. net.

LIVERPOOL MEDICO-CHIRURGICAL JOURNAL.—"Cancer of the Womb, by F. J. McCann, is a book that can be recommended alike to the general practitioner and the specialist. Written in a fluent manner, it embodies the ripe experience of a renowned operator, trained observer, and patient investigator."

EDINBURGH MEDICAL JOURNAL.—"The book is one of very great merit; it will be read with interest both by the specialist and general practitioner as an authoritative exposition of the important subject with which it deals."

PRACTITIONER.—"Dr. McCann has produced a valuable work which deserves to be widely known."

ST. BARTHOLOMEW'S HOSPITAL JOURNAL.—"The plates are excellent. This is a book we can thoroughly recommend."

London: Henry Frowde and Hodder & Stoughton.

As supplied to
H.R.H. the Princess Royal of England
for
H.R.H. the Princess Alexandra & Connaught
(Duchess of Fife).

By Appointment to H.M. THE KING.

As supplied to
H.R.H. the Crown Princess of Sweden
for
H.R.H. the Princess Ingrid.

HUMANIZED MILK

(Originally prescribed by the late Dr. Playfair specially for the Aylesbury Dairy Company).

Prepared only by

THE AYLESBURY DAIRY COMPANY, LTD.,

CHIEF OFFICE (open Day and Night):—

31, ST. PETERSBURGH PLACE, BAYSWATER, LONDON, W.

Telephone No.: Park 226.

SAMPLES FREE TO MEMBERS OF THE MEDICAL PROFESSION.

Special Milk for the Nursery and for Invalids from Tuberculin Tested Cows.

Valentine's Meat-Juice

For **Quieting** the **Irritable Stomach, Aiding Digestion** and **Sustaining** and **Strengthening, Valentine's Meat-Juice** is employed in **Hospital** and **Private Practice** in the treatment of

Diseases of Children.

Dr. Raphael Raimondi, *Consulting Physician of the Montmartre Nurseries, Paris, France:* "I use VALENTINE'S MEAT-JUICE with Nurslings eighteen months to two years old. These very Weak Babies derive great benefit from the use of this tonic preparation. I give it to Debilitated Infants, after they are eighteen months old, in doses of one teaspoonful in thirty grammes of boiled water twice a day, and to be continued for a month."

Park B. Tucker, M.D., *Health Officer, Hamilton, Bermuda:* "I have found VALENTINE'S MEAT-JUICE invaluable for teething children, who readily take and retain it when they refuse everything else. It has also proved very palatable and strengthening in all cases of irritable stomach, especially to that peculiar nausea so often complained of from the abuse of ardent spirits."

For Sale by European and American Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY,
RICHMOND, VIRGINIA, U. S. A.

D 117

THE LANCET.

No. 4794. LONDON, SATURDAY, JULY 17, 1915. Vol. CLXXXIX.

CONTENTS.

The whole of the literary matter in THE LANCET is copyright.

THE CROONIAN LECTURES on Trypanosomes causing Disease in Man and Domestic Animals in Central Africa. Delivered before the Royal College of Physicians of London on June 17th, 22nd, 24th, and 29th, 1915, by Sir DAVID BRUCE, C.B., F.R.S., M.B.Edin., F.R.C.P. Lond., Surg.-Gen., A.M.S.—Lecture IV.—(*Illustrated*) 109

ORIGINAL ARTICLES.

Breast Feeding: Some Functional Requirements of the Gland and of the Infant. By HAROLD K. WALLER, M.B., B.C. Cantab.—(*Illustrated*) 115

The Binet-Simon Method and the Intelligence of Adult Prisoners. By M. HAMBLIN SMITH, M.R.C.S., L.R.C.P. Lond. 120

What Tests in Childhood are Best Calculated to Throw Light upon the Capacities of Mental Defectives for Future Work? By W. A. POTTS, M.A.Cantab., M.D.Ed. 124

Three Cases of Complete Rupture of the Uterus during Labour Treated by Abdominal Hysterectomy. By J. F. R. SEHEULT, M.D.Edin.. 126

Sigmoid Tortuosity of the Internal Carotid Artery and its Relation to Tonsil and Pharynx. By A. G. TIMBRELL FISHER, M.B., Ch.B. Bristol, M.R.C.S., L.R.C.P. Lond.—(*Illustrated*) 128

REVIEWS AND NOTICES OF BOOKS.

On Means for the Prolongation of Life. By Sir Herman Weber, M.D.Bonn., F.R.C.P. Lond. Fourth edition 131

Nervous and Mental Diseases. By Archibald Church, M.D., and Frederick Peterson, M.D. Eighth edition..... 131

X Rays, How to Produce and Interpret Them. By Harold Mowat, M.D.Edin. 131

Cancer: Its Cause and Treatment. By L. Duncan Bulkley, A.M., M.D..... 131

A Manual for Midwives. By C. Nepean Longridge, M.D. Vict., M.R.C.P. Lond., F.R.C.S.Eng., and J. Bright Banister, M.A., M.D., B.C.Camb., M.R.C.P.Lond., F.R.C.S.Edin. Second edition 131

The Medical Annual, 1915..... 132

The Archives of Internal Medicine, Vol. XV. 132

Vida y Ciencia 132

LEADING ARTICLES.

THE SIZE OF MILITARY HOSPITALS..... 133

WOMEN AND WAR..... 134

ANNOTATIONS.

The State and Maternity Centres 135

The Waterloo Wounded 135

Apprenticeship and Conscription 136

Plague, Cholera, and Yellow Fever throughout the World 136

Sclerosis of the Arch of the Aorta 137

Evolution and Disease 138

VITAL STATISTICS:

Health of English Towns..... 145

Health of Scotch Towns 146

Health of Irish Towns 146

SPECIAL ARTICLES.

The Belgian Doctors' and Pharmacists' Relief Fund: Irish Branch of the Belgian Medical Relief Fund.—The Week's Subscriptions.—The Appeal for Surgical Instruments 139

Paris 139

India 140

The National Insurance Act 141

Royal College of Surgeons of England: Meeting of Council 142

Vital Statistics of Scotland: The New Series of Reports.... 142

The Services 144

CORRESPONDENCE.

The Dental Needs of the Army (Mr. F. Newland Pedley)..... 148

Apprenticeship and Conscription (Dr. R. C. T. Evans) 149

The Right-sided Murmurs of Mitral Stenosis (Dr. Alexander Morison) 149

Boiled Vaccines (Dr. Frank E. Taylor) 150

The Indemnity Policy of the Medical Defence Union (Dr. A. G. Bateman)..... 150

A Correction (Lieut.-Col. Henry Smith, I.M.S.) 150

The Medical Directory, 1916 (Messrs. J. & A. Churchill).... 150

The Position of Surgeons to Transports 150

Necessitous Ladies Holiday Fund (Miss Constance Beerbohm)..... 158

Accomplishments (?) 158

THE WAR.

The Casualty List..... 151

The Honours List 151

An Advisory Medical Committee in the Dardanelles 151

Sir John French on the Army Medical Service 151

The High Death-rate among the Wounded 151

South Africa and Medical Assistance to the Empire 152

After the War: the Future of the Incompletely Recovered Wounded Soldier..... 152

Metallic Head-pieces in the Trenches 153

Motor Transport for the Wounded 153

The Baltic and Corn Exchange Hospital 154

The Waste of Food-supplies at the Front 154

Russian Wounded and Medical Officers Burnt Alive 154

Depôt Hospitals in India 154

Relaxation of Recruiting Rules 154

Wounded Allies Relief Committee 154

Woodside Red Cross Hospital, Glasgow 154

The Allied Forces Base Hospital at Etaples 154

The Canadian Sick and Wounded 154

MEDICAL NEWS.

Fatal Accident to a Brighton Medical Man 127

Queen's University of Belfast... 130

An Infirmary Surgeon's Salary 132

The Royal Medical Benevolent Fund 135

Examining Board in England by the Royal Colleges of Physicians of London and Surgeons of England: Pass-list 146

University of Manchester: Pass-list 147

University of Bristol 147

University of Aberdeen: Degree conferred.—Pass-list 147

Trinity College, Dublin: School of Physic: Pass-list 147

University of London: King's College Hospital Medical School 147

University of Edinburgh 147

Convalescent Homes Association 147

Poor-law Medical Officers Association of England and Wales 147

Central Council for District Nursing in London 148

Donations and Bequests 148

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics: Notification of Births (Extension) Bill.—The National Registration Bill.—General Board of Control for Scotland.—The Pay in the Royal Army Medical Corps 154

House of Commons..... 155

Books, &c., received 148

Appointments 157

Vacancies 157

Births, Marriages, and Deaths.. 157

Notes, Short Comments, and Answers to Correspondents... 158

Medical Diary 159

Meteorological Readings 159

Acknowledgment of Communications received 160

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

NEW (2nd) EDITION

McKenzie's Exercise in Education and Medicine

READY NEXT WEEK

During the four years that have elapsed since the first appearance of this book physical education has changed ground so rapidly that an almost complete rewriting of the work has seemed necessary in order to keep the reader in touch with recent progress along old lines of investigation and the development of ideas that are new. In its review of the first edition the *British Medical Journal* said: "Dr. McKenzie's book will prove of great value to those who are concerned in any way with the organization of courses of physical exercise, and also to those who are in search of information with regard to the application of neuro-muscular training as a treatment for disease, or the results of disease."

Octavo volume, fully illustrated. By R. TAIT MCKENZIE, B.A., M.D., Professor of Physical Education, University of Pennsylvania. Cloth, 12s. net

SEE ALSO ADVERTISING PAGE 3.

W. B. SAUNDERS COMPANY

SEE ALSO ADVERTISING PAGE 3.

INDEX

MEDICAL AND OTHER BOOKS AND PUBLICATIONS

ARNOLD:— PAGE
Sibley ..... Treatment of Diseases of the Skin .. Cover 1

BAILLIERE, TINDALL & COX:—
Bigg..... Indigestion 6
" ..... War Diseases (Typhus, Enteric, Dysentery, and Cholera)..... 6
Freyer .... Enlargement of the Prostate .... Cover 1
" .... Surgical Diseases of the Urinary Organs Cover 1
Heath ..... Aural Suppuration: Its Arrest, &c. Cover 1
Morison.... Disorders of Heart Cover 1
Mummery .. Diseases of Rectum and Anus .. Cover 1

CASSELL & CO.:—
Walker .... Surgical Diseases and Injuries of Genito-Urinary Organs Cover 1

CHURCHILL J. & A.:—
Birnbaum & Blacker .. Malformations and Congenital Diseases of the Fœtus 5
Bowlby, Sir A. A., & Andrewes Surgical Pathology, &c. 5
Cameron .. Diet and Disease in Infancy 5

CHURCHILL—(Continued). PAGE
Corbin & Stewart's Physics & Chemistry 5
Cushny .... Pharmacology and Therapeutics 5
Eden ..... Manual of Midwifery 5
Fenwick .. Urinary Tuberculosis Cover 1
Firth ..... Notter & Firth's Hygiene 5
" ..... Military Hygiene 5
Hardwicke. Sight-Testing Made Easy 5
Hare ..... On Alcoholism: Its Clinical Aspects and Treatment .. Cover 1
Jellett's Midwifery 5
Lee ..... The Microtomist's Vade-Mecum 5
Leleau .... Sanitation in War .. 5
Lucas's Book of Prescriptions Cover 1
Morris's Anatomy 5
Panton .... Clinical Pathology .. 5
Smith ..... Law for Medical Men. 5
" ..... Taylor's Medical Jurisprudence 5
" ..... Lectures on Medical Jurisprudence 5
Starling's Physiology 5
Stimson .... Fractures and Dislocations 5
Thresh .... A Simple Method of Water Analysis 5
White's Materia Medica .. Cover 1

FROWDE AND HODDER & STOUGHTON:— PAGE
McCann .. Cancer of the Womb Cover 1
Waring .... Surgical Diseases of the Gall Bladder, Bile Ducts, & Liver 6
" .... Manual of Operative Surgery 6

GLAISHER:—
West ..... Granular Kidney and Physiological Albuminuria 6

HILTON & CO.:—
Ghosh's Materia Medica and Therapeutics 6

LIVINGSTONE (EDIN.):—
Buchanan .. Forensic Medicine & Toxicology .. Cover 1

MEDICAL PUBLISHING CO.:—
Lane, Sir A. .... Operative Treatment of Fractures 6

MURRAY:—
Brunton, Sir L. .... Therapeutics of the Circulation.. Cover 1

NISBET & CO.:—
Romer & Creasy .. Bonesetting and the Treatment of Painful Joints.... Cover 1

SAUNDERS COMPANY:— PAGE
Bass & Johns .... Alveolodental Pyorrhœa 3
Collected Papers of the Mayo Clinic 3
Gant ..... Diarrhœa 3
McKenzie.. Exercise in Education and Medicine .. 1
Scudder.... Treatment of Fractures 3

SIMPKIN, MARSHALL & CO.:—
Reinhardt-Rutland.. Mental Therapeutics Cover 1

WRIGHT & SONS (BRISTOL):—
Index of Prognosis and End-Results of Treatment 6
Morison .... Introduction to Surgery ..... Cover 1

MEDICAL LIBRARIES, &c.:—
Behnke—Stammering 6
Kelley—Stammering 6
Matthews—Wood: Application of Trusses 6
Schnelle—Stammering 6

OFFICIAL AND GENERAL ANNOUNCEMENTS

APPOINTMENTS VACANT:—
Birmingham General Dispensary . 51
Birmingham and Midland Eye Hospital 51
Bolton Infirmary and Dispensary. 50
Bristol General Hospital 50
Bury Infirmary 50
County Borough of Croydon 51
Croydon Mental Hospital 51
Derby County Asylum, Mickleover 52
Dublin Castle Red Cross Hospital 52
2/3rd East Anglian Field Ambulance 52
Elder Dempster & Co., Liverpool. 52
Evelina Hospital for Sick Children 52
Hall Line, Liverpool 52
Highland Mounted Brigade Field Ambulance 52
Hospital for Consumption and Diseases of the Chest, Brompton 50
Hospital Secretary, Bryanston-street 52
Hospital for Sick Children, Great Ormond-street 50
Jessop Hospital for Women, Sheffield 51
King Edward VII.'s Hospital, Cardiff 51
Leeds Public Dispensary 51
Manchester Children's Hospital.. 51
Manchester Northern Hospital for Women and Children 50
National Hospital for the Paralysed 52
Royal Albert Edward Infirmary and Dispensary, Wigan 51
Royal College of Surgeons in Ireland, Dublin 51
Royal Cornwall Infirmary, Truro.. 51
Royal Devon and Exeter Hospital, Exeter 50
Royal Eye Hospital, Southwark .. 54
Royal Surrey County Hospital, Guildford 50
Royal Victoria Hosp., Folkestone. 50
Salisbury Infirmary 51
Sheffield Royal Infirmary 50
South Devon and East Cornwall Hospital, Plymouth 51
University of Birmingham 51
2nd 1st South Midland Mounted Brigade Field Ambulance 52
University of Birmingham 51
University of Durham College of Medicine, Newcastle-upon-Tyne. 51
Walsall and District Hospital 50
Warneford, Leamington, and South Warwickshire General Hospital. 51
Warrington Infirmary and Dispensary 50
West Bromwich and District Hospital 50
West Ham and Eastern General Hospital 50
Winsley Sanatorium for Consumption 52

ASSISTANCIES, MEDICAL:—
Arnold & Sons, Giltspur-street.... 52
Box 98, Harrogate 52
Hutti Gold Mines 52
Locum, Talyllyn 52
No. 481, L.O., Strand 52
No. 484, L.O., Strand 52
No. 491, L.O., Strand 52
No. 493, L.O., Strand 53
No. 495, L.O., Strand 53
No. 496, L.O., Strand 52
No. 497, L.O., Strand 52
No. 498, L.O., Strand 52
No. 500, L.O., Strand 52
No. 501, L.O., Strand 53
No. 502, L.O., Strand 53
No. 503, L.O., Strand 52
Pacific Line, Liverpool 52
Storey, Craven-street 54
Surgeon, Leadenhall-street..... 52
Turner, Adam-street 52

ASYLUMS, HOMES, &c.:—
Abbotswood House, Cinderford .. 45
Ashwood House, Kingswinford .. 49
Austin, Clonakilty 49
Barnsley Hall, Bromsgrove 47
Barnwood House Hospital 48
Bishopstone House, Bedford..... 47
Brunton House, Lancaster 49
Buntingford House Retreat, Buntingford 45
Camberwell House, Peckham-road 44
Cheadle Royal 48
City of London Mental Hospital, Stone 49
Clarence Lodge, Clapham-park .. 47
Colchurst House, Alderley Edge .. 47
Coppice, The, Nottingham 48
Court Hall, Kenton, near Exeter.. 49
Dairymple House, Rickmansworth 45
Dartmoor Sanatorium 48
David Lewis Colony, Alderley Edge 47
Dowsing Medical and Therapeutic Institution 44
Duff House, Banff 48
"Emily Mangles" Convalescent Home, Farnham 49
G., Hampstead 49
Ghyllwoods 45
Grove House, Church Stretton.... 48
Grove, The, Catton, Norwich..... 48
Haydock Lodge, Newton-le-Willows 44
Haynes, Brentwood 49
Heigham Hall, Norwich 48
Home for Epileptics, Maghull 47
Invernith Sanatorium, Colinsburgh 45
London Fever Hospital..... 48
Malling Place, Kent 48
Melbourne House, Leicester 45
Mendip Hills Sanatorium 48
Meyrick, Brighton 49
Middleton Hall, Co. Durham..... 47
Moat House, Tamworth 48
Newmains Retreat, Lanarkshire.. 45
Nordrach-on-Dee, Banchory 48
Northumberland House, Finsbury park 47

ASYLUMS—(Continued).
Northwoods House, Winterbourne 44
Norwood Sanatorium, Ltd..... 45
No. 361, L.O., Strand 50
No. 412, L.O., Strand 49
No. 457, L.O., Strand 49
No. 492, L.O., Strand 50
Peckham House 44
Penrhos Hall Sanatorium, Norbrach-in-Wales 48
Plympton House, Plympton 48
Portsmouth Corporation Mental Hospital 47
St. Andrew's Hospital, Dollis Hill 49
St. Andrew's Hospital, Northampton 48
St. Luke's Hospital for Mental Diseases 49
St. Raphaels, Buxted, Sussex 49
Shaftesbury House, Formby-by-the-Sea 44
Springfield House Private Asylum, Bedford 47
Stretton House, Church Stretton... 48
The General Manager, Cravenstreet 50
The Grange, near Rotherham 48
Vale of Clwyd Sanatorium 46
Warneford Asylum, Oxford..... 49
Wye House, Buxton..... 48

HEALTH RESORTS, BATHS, &c.:—
Droitwich Brine Baths 47
Smedley's, Matlock 47
Woodhall Spa 47

HOUSE & ESTATE AGENTS:—
Rutley, Son & Vine, George-street, Euston-road 53
Tyser, Greenwood & Co., Chiswick 53
Urry, Woods & Pethick, Ventnor.. 54

LIFE & FIRE ASSURANCES, &c.:—
Prudential 42

MASSAGE:—
Associated Male Nurses and Masseurs 42
London School of Massage 42

MEDICAL ACCOUNTANTS, &c.:—
Turner 53

MEDICAL AGENTS:—
Fieldhall, Limited..... 54
Manchester Clerical, &c., Association 54
Medical Agency 54
Moore & Co. 52
Needes, Herbert 54
Needes, J. C. 54
Peacock & Hadley..... 54
Scholastic, Clerical, &c., Association 55
Turner 54

MEDICAL SCHOOLS:—
(LONDON.)
London School of Clinical Medicine 41
St. Mary's Hospital Medical School 41
West London Post-Graduate College 41
(PROVINCIAL, &c.)
University of Birmingham..... 41

NURSING INSTITUTES:—
Co-operation of Temperance Male and Female Nurses 43
General Nursing Association..... 42
Hospital for Sick Children, Great Ormond-street 42
London Nurses' Association 43
London Temperance Male and Female Nurses Co-operation .. 43
Male Nurses Temperance Co-operation 42
Mental Nurses Association 42
Mental Nurses' Co-operation..... 42
New Mental Nurses' Co-operation..... 42
Nurses' Co-operation, Portland-place 42
St. John's House 42
St. Luke's Hospital, E.C. 42
Temperance Association of Male Nurses, Ltd..... 43
Temperance Male Nurses Co-operation 43
The Retreat, York 43

OFFICIAL NOTICES:—
City of London Lying-in Hospital 41
London School of Tropical Medicine 41
Queen Charlotte's Lying-in Hospital 41
Queen Mary's Convalescent Auxiliary Hospitals 41
York-road General Lying-in Hospital, Lambeth 41

PARTNERSHIPS & PRACTICES:—
Arnold & Sons, Giltspur-street.... 53
Hanson, Leadenhall-street..... 53
Lee & Martin, Birmingham..... 53
Medico, Giltspur-street..... 53
No. 490, L.O., Strand 53
Turner, Adam-street 53

RAILWAY & STEAMSHIP CO.'S.:—
New Zealand Shipping Co. 42

TUTORS & LECTURERS:—
Med. Corres. College. .. 41 | Weymouth .. 41

For Index to Trade and Miscellaneous Advertisements see page 4.

The Croonian Lectures
ON
TRYPANOSOMES
CAUSING DISEASE IN MAN AND DOMESTIC ANIMALS IN CENTRAL AFRICA.

Delivered before the Royal College of Physicians of London on June 17th, 22nd, 24th, and 29th, 1915,

BY SIR DAVID BRUCE, C.B., F.R.S., M.B. EDIN., F.R.C.P. LOND.,
SURGEON-GENERAL, A.M.S.

LECTURE IV.[1]

Delivered on June 29th.

MR. PRESIDENT AND GENTLEMEN,—In this concluding lecture I intend to sketch briefly the outstanding features of the trypanosomes belonging to Groups B and C.

As far as we are aware, none of these trypanosomes attack man. They are therefore of less interest to us than the two species already described.

GROUP B.—THE TRYPANOSOMA PECORUM GROUP.

I.—TRYPANOSOMA PECORUM.

The first of this small group, which only consists of two species, is *Trypanosoma pecorum*. It is probably the most important trypanosome disease of domestic animals in Central Africa.

Morphology.

Fig. 4 (see Lecture I.) shows the general appearance of this trypanosome. It is the smallest of all the African pathogenic trypanosomes, varying from 9 to 18 microns in length, with an average of 14 microns. Its breadth averages 1·96 microns. This species is monomorphic, and short and stout in form. The contents of the cell are generally homogeneous. The nucleus is oval in shape and situated about the middle of the body. The micronucleus is small and round and situated near to, but not at, the posterior extremity, and often appears to project beyond the edge of the trypanosome. The undulating membrane is simple but fairly well developed, and there is no free flagellum. There ought to be no difficulty in recognising this species from morphology alone. If one or two hundred are drawn and measured the average length would separate it from its neighbour *Trypanosoma simiae*. Another small trypanosome, *Trypanosoma uniforme*, differs in shape and in having a free flagellum.

Animals Susceptible to Trypanosoma Pecorum.

Next in regard to the animals attacked by this trypanosome. This is essentially a disease of the herds: horses, donkeys, oxen, goats, sheep, and pigs, all fall victims. One peculiarity about *Trypanosoma pecorum* is, that it readily loses its virulence for certain animals by passage through certain other animals. For example, if this species—which is usually more or less infective to the monkey, dog, and rat—lives for some time in the blood of the goat, it loses its power of infecting the former animals. This has given rise to the erroneous idea that a species, *Trypanosoma nanum*, exists. *Trypanosoma nanum* is in truth nothing but a strain of *Trypanosoma pecorum*, which has lost its virulence for the other animals by its passage through the goat or allied species. (Table XIV.)

TABLE XIV.—*The Average Duration of Life, in Days, of Various Animals Infected by* Trypanosoma Pecorum.

—	Donkey.	Cattle.	Goat.	Pig.	Monkey.	Dog.	Guinea-pig.	White rat.
Average duration in days	87?	121?	55	21	129	48	41	33
Number of animals employed ...	1	4	59	1	11	57	5	10

The Percentages of Recoveries in Various Animals from Trypanosoma Pecorum *Infection.*

Percentages...	80	35	12	0	0	1	0	0
Number of animals employed ...	5	17	70	1	11	63	5	10

This trypanosome does not seem to be very fatal to horses, mules, or donkeys. In Nyasaland there was no opportunity of testing it on horses, but out of five donkeys four recovered. Two-thirds of the cattle, and seven-eighths of the goats succumbed.

The Carrier of Trypanosoma Pecorum.

The chief carrier of *Trypanosoma pecorum* is *Glossina morsitans*. I am not aware of this trypanosome ever having been found in nature in *Glossina palpalis*. In Uganda, where we made many feeding experiments with the wild *Glossina palpalis*, in not a single instance did a *Trypanosoma pecorum* infection take place. In Nyasaland, on the other hand, this parasite was the commonest of the trypanosomes with which *Glossina morsitans* was infected, as the following table will show Table XV.).

TABLE XV.—*The Proportion of Tsetse Flies* (Glossina Morsitans) *Naturally Infective with* Trypanosoma Pecorum, *in Nyasaland.*

1912.	No. of flies fed.	Monkey.	Dog.	Goat.	1912.	No. of flies fed.	Monkey.	Dog.	Goat.
Jan. 20th ...	296	—		—	May 14th ...	250	—	+	+
,, 24th ...	370	—		+	,, 17th ...	190		+	—
,, 29th ...	280	—		+	,, 24th ...	113		+	+
Feb. 2nd ...	295	—		+	,, 29th ...	120	—	+	+
,, 9th ...	220	—		+	,, 29th ...	230	—	+	+
,, 13th ...	200	+		—	,, 29th ...	320		+	+
,, 16th ...	195		—	—	,, 29th ...	240	+	+	+
,, 21st ...	170		—	—	,, 29th ...	100		+	+
,, 26th ...	170		—	—	,, 31st ...	175	—	+	+
March 2nd ...	140		—	—	June 2nd ...	300		+	—
,, 9th ...	165		+	—	,, 6th ...	210	+	+	+
,, 14th ...	100		—	—	,, 7th ...	230	—	+	+
,, 17th ...	160		+	+	,, 11th ...	160	—	+	+
,, 22nd ...	205		+	+	,, 18th ...	135	—	+	+
April 3rd ...	135		+	+	,, 25th ...	90	—	—	+
,, 10th ...	275	—	+	—	July 3rd ...	95		+	+
,, 15th ...	330	—	+	+	Sept 25th ...	70	+		
,, 18th ...	200	—	+	+	,, 27th ...	25	—		
,, 18th ...	180	—	+	—	Oct. 29th ...	87	—	—	+
,, 23rd ...	230	—	+	—	Nov. 5th ...	145		—	—
,, 23rd ...	140	+	+	+	,, 11th ...	150	—	+	+
,, 26th ...	100	—	+	+	,, 18th ...	157	—	+	—
,, 27th ...	260	—	+	+	,, 21st ...	95	—	—	—
May 3rd ...	155	+	+	—	,, 25th ...	180	—	—	+
,, 3rd ...	96	—	+	+	Dec. 3rd ...	180	+	+	+
,, 8th ...	330	—	—	+	,, 6th ...	198	+	—	—
,, 9th ...	120	—	+	+	,, 11th ...	156	—	—	+
,, 13th ...	50	—	—	—	,, 16th ...	113	+	+	+

[1] Lectures I., II., and III. were published in THE LANCET of June 26th (p. 1323), July 3rd (p. 1), and July 10th (p. 55) respectively.

It will be seen from this table that there were 56 experiments, and 10,081 tsetse flies (*Glossina morsitans*) were employed. In the 56 experiments *Trypanosoma pecorum* was found 46 times, more than twice as often as *Trypanosoma brucei*. Nine monkeys, 34 dogs, and 35 goats were infected. This gives a proportion of 4·6 per 1000 flies infected with *Trypanosoma pecorum*. It is therefore abundantly evident that *Glossina morsitans* is a carrier of this trypanosoma under natural conditions. But when once this disease has infected a herd there is some circumstantial evidence available to show that the infection may be spread by means of the ordinary cattle or buffalo flies, the *Tabanidæ*. The ordinary horse-fly of England belongs to this genus, and it is a matter of common experience that these flies give a severe bite or stab, as a rule drawing blood.

The *Tabanidæ* are in their habits and distribution quite different from the tsetse flies. At a particular place for the greater part of the year they may be absent or rare, but at certain times they suddenly appear in enormous numbers, only to disappear again in a few weeks. When swarming in this way they are a veritable pest to cattle. The flies feed mostly at the hottest time of the day, and the cattle, to protect themselves, crowd together so as to expose as small a surface of their bodies as possible. If there are any infected animals in the herd the conditions could not be more favourable for mechanical transmission. The infected animals are close beside the healthy, and the flies pass from one to another almost instantaneously.

In Uganda we had an opportunity of studying a sudden epidemic of this disease in a herd of milch cattle. In the course of two months 34 of the cows died out of a herd of 300. The evidence was all against this epidemic having been caused by tsetse flies. For four months we had as many as 100 fly boys scouring the district for biting flies, but not a single tsetse fly was captured. We therefore came to the conclusion that one or more infected animals having got accidentally into the herd, the infection was spread by one of these swarms of *Tabanidæ*. As soon as the affected animals were removed from the herd the epidemic ceased.

Another example of the same kind occurred among our experimental cattle at Mpumu in Uganda. The *Tabanidæ* which had been rare suddenly appeared in swarms. They were first seen in the valley to the west of the hill in September, 1909, and a month later in the valley to the east. Soon after this the cattle, which had shown no signs of disease during the previous year, were found to be suffering from *Trypanosoma pecorum*. Those which grazed in the valley to the west were first affected, and afterwards those which grazed to the east of the hill. Another writer, George E. Owen, has come to the same conclusion. He states that between 1908 and 1913 some 2500 to 3000 head of cattle died from trypanosome disease in the Barotse Reserve of Northern Rhodesia, though this district is free from *Glossina morsitans*. The mortality began each year in February and practically ceased after June. December and March are the months when flies are most numerous. In 1912 Mr. Owen was sent to investigate and was able to keep a herd of 800 without loss through 1913. The animals were carefully watched for six months during the season when the flies were scarce and all the infected or suspected cattle removed before the flies again became numerous. It may therefore, I think, be concluded with a fair degree of certainty that the trypanosome disease caused by *Trypanosoma pecorum* can be carried from sick to healthy animals by biting flies other than *Glossinæ*. What happens probably is this. One or more oxen previously exposed to the bites of tsetses are introduced into the herd living in a tsetse-free district, and from these few infected animals the disease is spread by the *Tabanidæ*. I must apologise for discussing this point at such a length, but it is an important one, and shows how necessary it is that cattle owners living outside tsetse areas should keep strict watch on their herds in order to prevent the presence of trypanosome-infected cattle among them. They should include a microscope in their outfit.

The Cycle of Development of Trypanosoma Pecorum *in* Glossina Morsitans.

This trypanosome belongs to Group B, in which development takes place first in the gut and then passes forward into the labial cavity of the proboscis, and finally reaches the salivary duct or hypopharynx where the trypanosomes revert to the original blood form and become infective. There is no infection of the salivary glands. (Table XVI.)

TABLE XVI.—*The Development of* Trypanosoma Pecorum *in* Glossina Morsitans (*Laboratory-bred Flies*).

Date.	Experiment.	No. of flies used.	Experiment positive or negative.	No. of infected flies found.	No. of days before flies became infective.	Mean temperature.
1912.						
May 16th ...	546	22	+	4	53	69° F. (20·5° C.)
July 2nd ...	524	20	+	2	37	65° F. (18·3° C.)
1913.						
Jan. 3rd ...	1732	60	—	0	—	84° F. (28·8° C.)
,, 7th ...	1737	40	+	3	19	84° F. (28·8° C.)
Feb. 10th ...	1853	25	+	5	24	84° F. (28·8° C.)
,, 24th ...	1950	33	+	6	21	84° F. (28·8° C.)
April 29th ...	2115	40	—	4	—	84° F. (28·8° C.)

Seven experiments were carried out with laboratory-bred flies. Five were positive and two negative. 240 flies were used and 24 infected flies found (10 per cent.). The first two experiments were carried out at the ordinary temperature of the laboratory; in the others the flies were kept in the incubator. It would appear from these five positive experiments that a period of from 19 to 53 days may elapse before the cycle of development of *Trypanosoma pecorum* in *Glossina morsitans* is complete and the fly becomes infective.

Result of the Dissection of the Infected Flies.

Table XVII. gives the result of the dissection of the 20 infected flies found in the positive experiments. The second column gives the number of days between the first feed of the fly and its death and dissection. In experiments 546 and 524 there was no separate examination of the hypopharynx; it is included in the general term proboscis. It was only when the importance of the hypopharynx became evident that an examination of the separate parts of the proboscis was made. In not a single fly was any invasion of the salivary glands noted, but it will be seen that in every

positive experiment trypanosomes are found in the hypopharynx.

TABLE XVII.—*Result of the Dissection of Infected Flies. (Laboratory-bred Flies. Positive Experiments.)*

Experiment.	Time, days	Proboscis.		Proventriculus	Crop.	Foregut.	Midgut.	Hindgut.	Salivary glands.
546	30	—		—	—	+	+	+	—
,,	64	—		—	—	++	++	++	—
,,	84	—		—	—	++	++	++	—
,,	84	++		++	++	++	++	++	—
524	27	—		—	—	—	++	++	—
,,	55	+		+	—	++	++	++	—
		Labial cavity.	Hypopharynx.						
1737	27	++	++	++	++	++	++	++	—
,,	28	+	—	+	—	++	++	+	—
,,	30	++	++	++	—	++	++	++	—
1853	17	++	++	++	—	++	++	++	—
,,	22	—	—	—	—	+	++	+	—
,,	23	+	—	+	—	++	++	++	—
,,	25	++	++	+	—	++	++	++	—
,,	26	++	++	+	—	++	++	++	—
1950	17	—	—	+	—	++	++	++	—
,,	19	++	++	—	—	++	++	++	—
,,	24	—	—	—	—	—	+	—	—
,,	26	++	++	+	—	++	++	++	—
,,	31	++	++	+	—	++	++	++	—
,,	31	++	++	++	—	++	++	++	—

So much for the positive experiments, let us see what is the result of the dissection of the infected flies in the negative experiments. (Table XVIII.) In none of the infected flies had the development reached the hypopharynx, and consequently none of the flies had become infective.

TABLE XVIII.—*Result of the Dissection of the Infected Flies. (Laboratory-bred Flies. Negative Experiments.)*

Experiment.	Time, days.	Proboscis.		Proventriculus.	Crop.	Foregut.	Midgut.	Hindgut.	Salivary glands.
		Labial cavity.	Hypopharynx.						
2115	9	—	—	—	—	—	+	—	—
,,	9	—	—	—	—	—	++	—	—
,,	9	+	—	+	—	+	++	++	—
,,	11	—	—	+	—	+	++	+	—

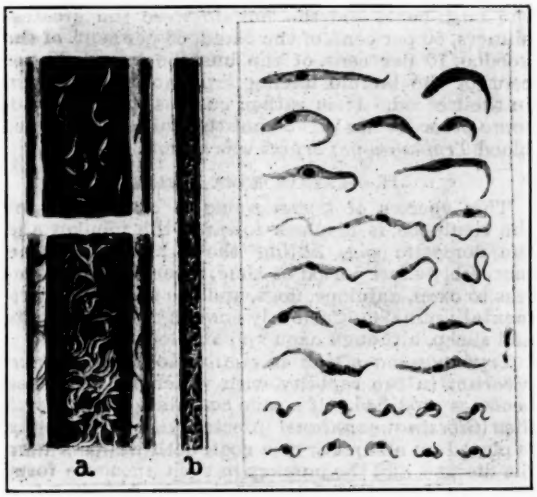
From a consideration of these tables it will be seen that in *Trypanosoma pecorum* the development takes place at first in the intestine, then passes forward into the labial cavity, and finally invades the hypopharynx, and there is completed.

The Type of Trypanosomes found in the Infected Flies.

Fig. 21 represents the developmental forms of *Trypanosoma pecorum* found in the labial cavity of *Glossina morsitans*. In regard to the forms found in the intestine, it may be said that these are indistinguishable from the developmental forms of other pathogenic trypanosomes. The first seven figures represent early forms in the labial cavity. These were seen adhering singly by their flagella to the labrum.

The next group contains the ordinary forms found clinging by their flagellar ends to the labrum. It will be seen that they have assumed the crithidial stage, a stage which seems to be a *sine qua non* in the final stages of the cycle of development of all the pathogenic trypanosomes, and the interpretation of which is still obscure. The small blood forms are from the hypopharynx of dead infective flies, and also from living infective flies induced to salivate on a cover-glass. They represent the final stage in the cycle of development and are the only infective forms. On the same figure are seen drawings, at a magnification of a little over 500 diameters, of the labrum and hypopharynx of a fly

FIG. 21.



Developmental forms of *Trypanosoma pecorum* found in the labial cavity and hypopharynx of infected flies. *a*, Labrum. *b*, Hypopharynx.

infected with this trypanosome. While the labial cavity is seen to contain clusters of large ribbon-like trypanosomes, the hypopharynx is swarming with the small infective forms. From these drawings the ease and facility with which a tsetse fly can infect an animal will be readily understood.

Another way of showing how easy it is for a fly to infect an animal is to induce an infected fly to salivate on a cover-glass. If a hungry fly is placed on a large cover-glass which covers a man's finger the fly will attempt to bite through the glass, and in doing so will smear it with its saliva. If this is then stained and examined under a microscope thousands of trypanosomes will be seen.

TABLE XIX.—*The Species of Animals dealt with, the Total Number Examined, the Number found Infected, and the Species of Trypanosome by which they were Infected.*

Animal.	Total No. examined.	No. found infected.	Tryp. brucei.	Tryp. pecorum.	Tryp. simiæ.	Tryp. capræ.	Tryp. ingens.
Eland	10	6	0	6	0	1	0
Sable	5	0	0	0	0	0	0
Water-buck	13	9	3	1	0	8	0
Koodoo	3	2	0	2	0	0	0
Bush-buck	10	7	0	7	0	1	0
Hartebeeste	35	6	5	1	0	0	0
Reed-buck	19	12	3	1	0	9	1
Oribi	26	4	1	1	0	1	1
Duiker	7	2	1	0	0	0	1
Buffalo	9	2	0	2	0	0	0
Lion	1	0	0	0	0	0	0
Hyæna	3	2	0	2	0	0	0
Elephant	2	0	0	0	0	0	0
Warthog	33	7	1	3	3	0	0
Wild cat	3	0	0	0	0	0	0
Porcupine	1	0	0	0	0	0	0
Total	180	59	14	26	3	20	3

The Reservoir of Trypanosoma Pecorum.

Table XIX. represents the number of times *Trypanosoma pecorum* was found among the 180 wild animals examined in Nyasaland and the species of game which harboured it. It will be seen that 26 animals among the 180 harboured this parasite (14·4 per cent.), and the eland, the koodoo, the bush-buck, and the buffalo were the greatest sinners, 60 per cent. of the eland, 66 per cent. of the koodoo, 70 per cent. of the bush-buck, and 22 per cent. of the buffalo having *Trypanosoma pecorum* in their blood. It is rather curious that *Trypanosoma pecorum* has picked out the animals in whose blood *Trypanosoma brucei* was absent.

II.—TRYPANOSOMA SIMIÆ.

This species of trypanosome is remarkable for the virulence it displays towards the monkey and the domestic pig, killing these animals in an incredibly short period of time, whereas it is harmless to oxen, antelope, dogs, and the smaller experimental animals. Curiously enough it affects goats and sheep, although oxen and antelope escape.

Trypanosoma simiæ is similar to *Trypanosoma pecorum* in the rapidity with which its virulence becomes modified. If a cage containing wild tsetse flies (*Glossina morsitans*) infected with this parasite is placed on a monkey or a goat, both animals take the disease, and the monkey in such an acute form that the average duration of disease is only a few days. But if the attempt is made to pass this species of trypanosome from an infected goat to a healthy monkey by the inoculation of the goat's blood the experiment usually fails, showing that a short sojourn in the blood of the goat has almost nullified the virulence of the parasite for the monkey.

Another interesting point in regard to this species is, that as far as is known, the warthog is the only animal among the wild game which harbours it. It is probable that it will also be found in the blood of the bush-pig, but that has not been done yet.

Morphology.

Trypanosoma simiæ is longer than *Trypanosoma pecorum*. It is monomorphic, varying from 14 to 24 microns in length, with an average of 18 microns. The trypanosomes are fairly uniform in shape; the body is elongated, undulating, and frequently extends in a straight line; the contents of the cell are clear and free from granules; the nucleus is oval and situated about the middle of the body; the micronucleus is small and round, situated almost invariably about 1½ microns from the posterior extremity; and the undulating membrane is well developed and thrown into bold undulations.

It is difficult to say whether this species has a free flagellum or not. By careful staining and good illumination it would seem in most cases as if the undulating membrane extended to the tip of the flagellum. In some preparations, however, the last two or three microns of the flagella appear to be free. (See Lecture I., Fig. 5.)

Animals Susceptible to Trypanosoma Simiæ.

Table XX. shows the average duration of life in various animals infected by *Trypanosoma simiæ* (mixed infections are not included), also the percentages of recoveries from the disease. It will be seen that the ox, antelope, baboon, dog, rabbit, guinea-pig, and rat are refractory.

In the whole range of the trypanosome diseases of animals there is surely nothing so striking as the rapidly fatal action of *Trypanosoma simiæ* on the domestic pig. In nine experiments the average duration was only 5·3 days. This not from the time of the appearance of the trypanosome in the blood, but from the date of the infection. Further, this rapid action is not the result of an exaltation of virulence by numerous passages through the pig, but natural to the trypanosome.

TABLE XX.—*The Average Duration of Life in Various Animals infected by* Trypanosoma Simiæ, *Nyasaland.* (*Mixed infections not included.*)

—	Ox.	Antelope.	Goat and sheep.	Pig.	Baboon.	Monkey.	Dog.	Rabbit.	Guinea-pig.	Rat.
Average duration in days	R.	R.	46·6	5·3	R.	10·8	R.	R.	R.	R.
No. of animals employed	4	5	5	9	3	24	21	10	5	5

The Percentages of Recoveries in Various Animals from Trypanosoma Simiæ *Infection.* (*Mixed infections included.*)

Percentages	R.	R.	37·5	0·0	R.	14·3	R.	R.	R.	R.
No. of animals employed	4	5	32	13	3	35	21	10	5	5

R. = Refractory.

The Carrier of Trypanosoma Simiæ.

The carrier of *Trypanosoma simiæ* in Nyasaland is *Glossina morsitans*. Table XXI. gives the proportion of flies naturally infected with this parasite. There were 56 experiments and 10,081 tsetse flies were employed. In the 56 experiments *Trypanosoma simiæ* was found 34 times (60·7 per cent.). Twenty-six monkeys and 17 goats were infected.

TABLE XXI.—*The Proportion of Tsetse Flies* (Glossina Morsitans) *Naturally Infective with* Trypanosoma Simiæ *in Nyasaland.*

1912.	No. of flies fed.	Monkey.	Dog.	Goat.	1912.	No. of flies fed.	Monkey.	Dog.	Goat.
Jan. 20th ...	296	+		—	May 14th ...	250	+	—	+
,, 24th ...	370	+		—	,, 17th ...	190		—	+
,, 29th ...	280	+		+	,, 24th ...	113		—	+
Feb. 2nd ...	295	+		+	,, 29th ...	120	—	—	—
,, 9th ...	220	+		+	,, 29th ...	230	—	—	—
,, 13th ...	200	+		—	,, 29th ...	320		—	—
,, 16th ...	195		—	—	,, 29th ...	240	—	—	+
,, 21st ...	170		—	—	,, 29th ...	100		—	+
,, 26th ...	170		—	+	,, 31st ...	175	+	—	+
March 2nd ...	140		—	—	June 2nd ...	300		—	+
,, 9th ...	165		—	—	,, 6th ...	210	—	—	—
,, 14th ...	100		—	—	,, 7th ...	230	—	—	—
,, 17th ...	160		—	—	,, 11th ...	160	+	—	—
,, 22nd ...	205		—	+	,, 18th ...	135	—	—	—
April 3rd ...	135		—	—	,, 25th ...	90	—	—	—
,, 10th ...	275	+	—	—	July 3rd ...	95		—	—
,, 15th ...	330	+	—	+	Sept. 25th ...	70	—	—	—
,, 18th ...	200	+	—	—	,, 27th ...	25	—		
,, 18th ...	180	+	—	+	Oct. 29th ...	87	—	—	—
,, 23rd ...	230	+	—	—	Nov. 5th ...	145		—	—
,, 27rd ...	140	—	—	—	,, 11th ...	150	+	—	—
,, 26th ...	100	+	—	+	,, 18th ...	157	+	—	+
,, 27th ...	260	+	—	—	,, 21st ...	95	—	—	—
May 3rd ...	155	+	—	—	,, 25th ...	180	+	—	—
,, 3rd ...	96	—	—	—	Dec. 3rd ...	180	+	—	—
,, 8th ...	330	+	—	—	,, 6th ...	198	+	—	—
,, 9th ...	120	+	—	—	,, 11th ...	156	+	—	—
,, 13th ...	50	—	—	+	,, 16th ...	113	+	—	—

This gives a proportion of 3·4 per 1000 flies infective with *Trypanosoma simiæ*. It must be noted that warthogs were numerous in the sleeping sickness area, Nyasaland, which accounts for the fairly high proportion of infected flies.

The Cycle of Development of Trypanosoma Simiæ *in* Glossina Morsitans.

This species belongs to Group B and the cycle of development is similar to that which has already been described as occurring in *Trypanosoma pecorum*.

The Reservoir of Trypanosoma Simiæ.

The number of times *Trypanosoma simiæ* was found among the 180 wild animals examined in Nyasaland, and the species of game which harboured it, are given in Table XIX. It will be seen that only 3 animals among the 180 harboured this parasite (1·7 per cent.). This is, of course, due to the fact that it is only the warthog among the wild game which acts as a reservoir. Thirty warthogs were examined and 3 were found to be infected (10 per cent.).

GROUP C.—THE TRYPANOSOMA VIVAX GROUP.

The three species forming this group have a strong family resemblance, and but for size might almost be included in one species.

I.—TRYPANOSOMA VIVAX.

This is the cause of one of the most important cattle diseases in Uganda. We did not meet with it in Nyasaland, where its place seems to be taken by *Trypanosoma capræ*. It is, however, widely distributed in Central Africa. It has been reported from Senegal and the Sudan in the north to Rhodesia in the south. It is easily recognised on account of its extreme activity during life, its characteristic morphology in stained specimens, and the fact that it only affects horses, cattle, goats, and sheep, while monkeys, dogs, rabbits, guinea-pigs, rats, and mice are refractory. In Uganda the tsetse flies on the lake shore were found to be infected with it, and it was also found in the blood of a bush-buck shot at the same place at which the flies were collected. (See Lecture I., Fig. 6.)

II.—TRYPANOSOMA UNIFORME.

This trypanosome resembles *Trypanosoma vivax* very closely except that it is smaller. Up to the present it has only been found in Uganda. Its carrier there is *Glossina palpalis*, and its reservoir the wild game on the lake shore. (See Lecture I., Fig. 8.)

III.—TRYPANOSOMA CAPRÆ.

This species has only been reported up to the present from Lake Tanganyika and Nyasaland. It, like the other two species belonging to this group, only affects cattle, sheep, and goats. Monkeys, dogs, and smaller experimental animals are immune.

Morphology.

The general appearance of this parasite is shown in Fig. 7, Lecture I. During life, like the other members of the group, it is characterised by its extreme mobility. It is a monomorphic species varying from 18 to 32 microns in length, the greatest number of individuals being 25 microns long. Measured across the broadest part *Trypanosoma capræ* averages three microns in breadth (maximum, 4·25 microns, minimum 1·75). It differs from *Trypanosoma vivax* in that it is more heavily built and altogether has a larger and clumsier appearance. The posterior half is swollen and its end is bluntly angular or rounded; the anterior extremity is narrower and pointed; the contents of the cell are clear, with a delicate alveolar structure, and free from vacuoles and granules; the nucleus is oval, compact, and lying about the middle of the body; the micronucleus is large and round, situated, as a rule, close to the posterior extremity; and the undulating membrane is more developed than in *Trypanosoma vivax*, and is thrown into bolder folds and undulations. There is a well-marked free flagellum which averages 6·5 microns in length (maximum 9·4 microns, minimum 4).

Susceptibility of Animals to Trypanosoma Capræ.

Table XXII. gives the average duration of the disease and the percentages of recoveries in various experimental animals:—

TABLE XXII.—*The Average Duration of Life in Various Animals Infected by* Trypanosoma Capræ, *Nyasaland.*

—	Ox.	Goat.	Sheep.	Monkey.	Dog.	Guinea-pig.	Rat.
Average duration in days	—	56·5	115·3	R.	R.	R.	2
Number of animals employed... ...	—	19	3	12	12	2	2

The Percentage of Recoveries in Various Animals from Trypanosoma Capræ *Infection.*

Percentages	100	32·2	25	R.	R.	R.	R.
Number of animals employed... ...	2	28	4	12	12	2	2

R. = Refractory.

The Carrier of Trypanosoma Capræ.

The carrier of *Trypanosoma capræ* in Nyasaland is *Glossina morsitans*. Table XXIII. shows the

TABLE XXIII.—*The Proportion of Tsetse Flies* (Glossina Morsitans) *Naturally Infective with* Trypanosoma Capræ *in Nyasaland.*

1912.	No. of flies fed.	Monkey.	Dog.	Goat.	1912.	No. of flies fed.	Monkey.	Dog.	Goat.
Jan. 20th ...	296	—		—	May 14th ...	250	—	—	+
,, 24th ...	370	—		+	,, 17th ...	190		—	+
,, 29th ...	280	—		—	,, 24th ...	113		—	+
Feb. 2nd ...	295	—		+	,, 29th ...	120	—	—	—
,, 9th ...	220	—		+	,, 29th ...	230	—	—	—
,, 13th ...	200	—		+	,, 29th ...	320		—	+
,, 16th ...	195		—	—	,, 29th ...	240	—	—	+
,, 21st ...	170		—	—	,, 29th ...	100		—	+
,, 26th ...	170		—	—	,, 31st ...	175	—	—	—
March 2nd ...	140		—	+	June 2nd ...	300		—	+
,, 9th ...	165		—	+	,, 6th ...	210	—	—	+
,, 14th ...	100		—	+	,, 7th ...	230		—	—
,, 17th ...	160		—	—	,, 11th ...	160	—	—	+
,, 22nd ...	205		—	+	,, 18th ...	135	—	—	—
April 3rd ...	135		—	—	,, 25th ...	90	—	—	+
,, 10th ...	275	—	—	+	July 3rd ...	95		—	—
,, 15th ...	330	—	—	+	Sept. 25th ...	70	—		
,, 18th ...	200	—	—	+	,, 27th ...	25	—		
,, 18th ...	180	—	—	—	Oct. 29th ...	87	—	—	+
,, 23rd ...	230	—	—	+	Nov. 5th ...	145		—	+
,, 23rd ...	140	—	—	+	,, 11th ...	150	—	—	+
,, 26th ...	100	—	—	—	,, 18th ...	157	—	—	+
,, 27th ...	260	—	—	+	,, 21st ...	95	—	—	—
May 3rd ...	155	—	—	+	,, 25th ...	180	—	—	—
,, 3rd ...	96	—	—	—	Dec. 3rd ...	180	—	—	+
,, 8th ...	330	—	—	+	,, 6th ...	198	—	—	+
,, 9th ...	120	—	—	+	,, 11th ...	156	—	—	—
,, 13th ...	50	—	—	+	,, 16th ...	113	—	—	+

proportion of tsetse flies naturally infected with this parasite in Nyasaland. In 56 experiments, in which 10,081 tsetse flies were used, *Trypanosoma capræ* was found 35 times (62·5 per cent.). Since this species is not pathogenic to the monkey or dog, of course it was found only in the experimental goats. This gives a proportion of 3·5 per 1000 flies infected with *Trypanosoma capræ*.

The Cycle of Development of Trypanosoma Capræ *in* Glossina Morsitans.

Trypanosoma capræ belongs to the *Vivax* group, in which the development of the trypanosome is restricted to the proboscis. Six experiments were made with laboratory-bred flies; five were positive and one negative. (See Table XXIV.) 170 laboratory-bred flies were used, and 46 infected flies were found (27·1 per cent). The first three experiments were carried out at the ordinary temperature of the laboratory; in the last three the cages containing the flies were kept in an incubator. It is difficult to understand the difference in the number of infected flies found. In Experiments 444 and 1215 only 8 and 5 per cent. respectively of the flies became infected, whereas in the last three experiments an average of more than 40 per cent. was found. The flies in the second group were kept, it is true, at a temperature similar to that which they would find in summer in their native haunts in the low country, while the first three experiments were done in winter and at the ordinary temperature of the laboratory. This would, no doubt, explain the difference to some extent. Again, goats and sheep infected with *Trypanosoma capræ* are unsatisfactory animals to feed flies upon. One day the trypanosomes are present in small numbers in the blood; the next day it may be impossible to find any; very seldom are they in large numbers. It is possible, then, that flies may feed on an infected goat or sheep without taking in a single trypanosome. It would appear from the five positive experiments that an average period of 19 days elapses before the cycle of development of this parasite is complete in *Glossina morsitans* and the fly becomes infective. Now 46 infected flies were found among 170 used, and the next table gives the results of the dissection of these flies.

TABLE XXIV.—*The Development of* Trypanosoma Capræ *in* Glossina Morsitans. (*Laboratory-bred Flies.*)

Date.	Experiment.	No. of flies used.	Experiment positive or negative.	No. of infected flies found.	No. of days before flies became infective.	Mean temperature.
1912.						
April 16th	444	12	+	1	16	71° F. (22·1° C.)
June 3rd	617	33	—	0	—	65° F. (18·3° C.)
,, 3rd	1215	22	+	1	21	65° F. (18·3° C.)
1913.						
Jan. 18th	1777	35	+	11	19	84° F. (28·8° C.)
,, 22nd	1784	35	+	20	19	84° F. (28·8° C.)
April 1st	2046	33	+	13	20	84° F. (28·8° C.)

It will be seen from Table XXV. that it was not until the last experiment that the labial cavity and hypopharynx were examined separately. In the previous experiments the presence or absence of trypanosomes in the proboscis as a whole was noted. In the first two experiments only a single infected fly was found in each. In Experiment 1777, 11, and in 1784 as many as 20 were found. In regard to the number of trypanosomes in the labial cavity this may vary greatly. Sometimes the lumen of the tube will be seen to be densely crowded; at other times a single colony will be seen. For example, in Experiment 1777, the first infected fly, dissected on the twenty-first day, is noted to have had the lumen of the proboscis swarming with clusters of torpedo-shaped flagellates attached to the labrum by their flagellar ends, a few swimming free. In the seventh infected fly, dissected on the thirtieth day, only three colonies are noted. In the same way at one time the hypopharynx may contain few; at another time it is seen to be densely packed with swarms of actively moving trypanosomes. In unstained specimens the difference in size and shape between the trypanosomes in the labial cavity and those in the hypopharynx is quite manifest. From this table the broad facts stand out boldly that in this group of trypanosomes the development is confined to the labial cavity and hypopharynx and does not take place in any other part of the fly.

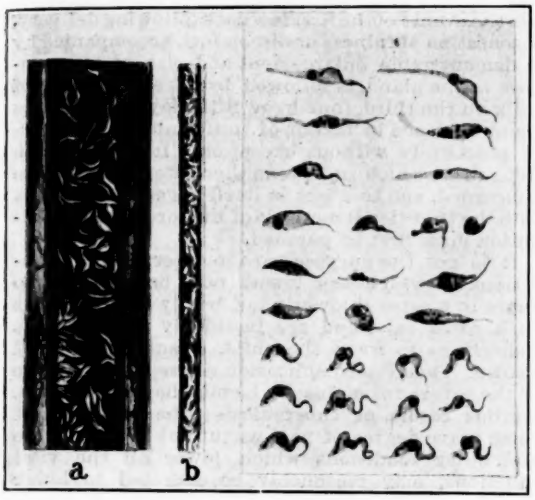
TABLE XXV.—*Result of the Dissection of the Infected Flies.* (*Laboratory-bred Flies. Positive Experiments.*)

Experiment.	Time, days.	Proboscis.		Proventriculus.	Crop.	Foregut.	Midgut.	Hindgut.	Salivary glands.
444	25	+		—	—	—	—	—	—
1215	32	+		—	—	—	—	—	—
1777	21	+		—	—	—	—	—	—
,,	26	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
1784	19	+		—	—	—	—	—	—
,,	21	+		—	—	—	—	—	—
,,	23	+		—	—	—	—	—	—
,,	24	+		—	—	—	—	—	—
,,	29	+		—	—	—	—	—	—
,,	29	+		—	—	—	—	—	—
,,	29	+		—	—	—	—	—	—
,,	29	+		—	—	—	—	—	—
,,	29	+		—	—	—	—	—	—
,,	29	+		—	—	—	—	—	—
,,	29	+		—	—	—	—	—	—
,,	29	+		—	—	—	—	—	—
,,	29	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
,,	30	+		—	—	—	—	—	—
		Labial cavity.	Hypopharynx.						
2046	23	+	+	—	—	—	—	—	—
,,	23	+	—	—	—	—	—	—	—
,,	24	+	++	—	—	—	—	—	—
,,	26	++	++	—	—	—	—	—	—
,,	28	+		—	—	—	—	—	—
,,	28	+		—	—	—	—	—	—
,,	29	++	++	—	—	—	—	—	—
,,	29	+	++	—	—	—	—	—	—
,,	29	+	++	—	—	—	—	—	—
,,	29	+	++	—	—	—	—	—	—
,,	29	++	++	—	—	—	—	—	—
,,	29	++	+	—	—	—	—	—	—
,,	30	+	++	—	—	—	—	—	—

The Type of Trypanosomes Found in the Infected Flies.

No attempt was made by the Commission to study the development of *Trypanosoma capræ* in *Glossina morsitans* in the earliest stages. This can only be done if a large number of laboratory-bred flies are available, and this was not the case in Nyasaland. Fig. 22 represents some of the developmental

FIG. 22.



Developmental forms of *Trypanosoma capræ* found in the labial cavity and hypopharynx of infected flies. *a*, Labrum. *b*, Hypopharynx.

forms found in the labial cavity and hypopharynx of infected flies. It will be seen that most of the flagellates found attached to the labrum are crithidial in type, with well-defined nuclei, micronuclei, and free flagella. Some are ribbon-shaped, others have elongated posterior extremities, and again, others are torpedo-shaped. The last three rows are from the hypopharynx, and have been obtained as a rule by causing the fly to salivate on the cover-glass. They represent the final stage in the cycle of development—the reversion to the infective or blood form. They are rather smaller than those found in the blood of the vertebrate host, but resemble them closely in every other way.

The Reservoir of Trypanosoma Capræ.

Among the 180 wild animals examined in Nyasaland 20 harboured *Trypanosoma capræ* (11·1 per cent.)—61 per cent. of the water-buck and 47 per cent. of the reed-buck acted as reservoirs. (See Table XIX.)

CONCLUSION.

This concludes the Croonian Lectures on the Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. These lectures deal with but a small part of the subject, which has in the course of the last 20 years grown to huge proportions. Nothing has been said about medicinal treatment, and even measures of prevention have been left a good deal to the imagination. Taking a look back over the whole field the outstanding features may be said to be, first, that some order is beginning to reign in what was lately chaos in regard to the classification of the pathogenic trypanosomes. They may all now be referred to three groups and nine species.

In regard to the transference of the virus from sick to healthy animals by the fly, this has been made clearer and easier of comprehension by the discovery of the part which the salivary glands and hypopharynx play in the various modes of development which the trypanosomes undergo in the fly. It results that it would almost appear impossible for an infective fly to pierce even momentarily the skin of a healthy susceptible animal without causing infection.

Another important feature is the proof brought forward that *Trypanosoma brucei* and *Trypanosoma rhodesiense* are the same.

Finally, in regard to the prevention of these trypanosome diseases of man and domestic animals. We have seen that the wild game in the fly country is heavily infected. It is impossible to doubt that they are the reservoir and source of many of these diseases. There can be little doubt that if the wild game were driven out of the fly country trypanosome diseases such as those caused by *Trypanosoma brucei* and *Trypanosoma pecorum* would disappear.

In regard to the measures of prevention against the most important of all the trypanosome diseases—Congo sleeping sickness—it has been shown by experience that the removal of the natives from the fly area is a simple and efficacious way of stopping an epidemic. In these sparsely inhabited countries, where spare land and food are easily obtained, there is, as a rule, no difficulty in effecting this migration. If it is desired to go a step further and render the sleeping-sickness area inhabitable, then clearing and cultivation must be resorted to. By these means, in all probability, *Glossina palpalis* will be driven away, and with it the disease.

BREAST FEEDING:

SOME FUNCTIONAL REQUIREMENTS OF THE GLAND AND OF THE INFANT.

BY HAROLD K. WALLER, M.B., B.C. CANTAB.

THE high position reached by obstetrical science has been influenced in a great measure by the urgent and dramatic nature of the difficulties and disasters of childbirth. To this no doubt is due much of the accuracy with which their causes have been elucidated and the treatment prescribed. The study of infant feeding has possibly suffered by virtue of its problems coming as a kind of anti-climax. At least it would seem that knowledge in matters pertaining to early infancy has hardly proceeded at the same rate, for tradition still influences a larger share of therapeutics here than is tolerated in obstetrics. Purgation has not yet been dethroned from its position of sinister importance; dentition is still held responsible for a multitude of ailments with which it can have but the faintest connexion; and the early failure of lactation has come to be almost tacitly accepted as an inevitable pitfall in the path of infant welfare. If it should appear paradoxical to associate tradition with this last example in face of all the modern improvements in artificial feeding, all the great chemical and industrial activity with which its elaboration has been associated, it must also be remembered that it is the lack of accurate knowledge of the subject of lactation that has given bottle feeding its chief impetus. Without this its present high standard of development could hardly have been reached. Once the negative character of this structure is appreciated there appears to be room for doubt whether the underlying physiological principles are such as they are represented to be.

Unfortunately, the chapter of physiology dealing with lactation can be searched in vain for facts which offer any help to the physician. The analysis of milk has been used almost wholly in the service of artificial feeding. Knowledge of the functional behaviour of the breast remains very much where Budin's[1] research left it, though the work of Pritchard[2] has suggested many valuable possibilities for its extension, and in THE LANCET there appeared recently three important papers on breast feeding, written by Dr. David Forsyth,[3] Dr. Lucy Naish,[4] and Dr. Disney Cran.[5] Dr. Forsyth's article deals with the quantities of breast milk taken by an infant at individual meals in a series of weighing experiments conducted over a period of several weeks, and he suggests that his conclusions would repay further investigation. Most people will agree with his statement that "compared with the great strides that have been taken in the last half century in artificial methods of feeding, not a great deal has been done to extend our control over nature's method." Dr. Naish, in a paper which, like the other two, deserves wide recognition, discusses many details in the management of breast feeding. Perhaps the most important point to which she directs attention is the periodic character in the secretion of milk. Dr. Cran is concerned with the view of certain French physicians. He gives prominence to Dr. Variot's criticism of Budin's teaching that many breast-fed infants suffer from superalimentation. He emphasises Variot's maxim: "Let the child on the breast drink according to its appetite."

The value of the several points brought out by these three writers is immensely enhanced if they are taken in conjunction with one another. To emphasise the need for correlation between (1) the periodicity in the secretion of milk, (2) the size of the meals, and (3) the infant's appetite, is the object of this contribution. It is hoped that some of the difficulties which surround the subject may thereby be lessened and the way cleared for further observation, which will result in lactation being removed from its present unsatisfactory position, partly within and partly without the pale of accurate medical science.

Efforts to control the flow of milk which do not take into account the periodic character of its secretion are likely for the most part to end in failure. To this fact must be attributed much of the strength of a very widespread conviction that lactation is a most unreliable function. In the course of many observations from which these notes were constructed, no fact stood out with more prominence than the completely erroneous nature of this belief. And the next conclusion to be reached was the rarity of what is commonly regarded as the typical way in which lactation is liable to fail—viz., so marked a physiological inability to supply sufficient food to satisfy the infant's requirements that supplementary feeding is clearly indicated within the first few weeks after delivery. The report of this very frequent occurrence must always be received with scepticism in the case of infants born normally at or about the full term of gestation of averagely healthy women. Careful inquiry will usually elicit the presence of one or more factors at variance with the requirements of the gland or of the child, and in no sense can the failure be detected in the function of lactation itself. Reference to its reputation for inability to fulfil its task is not infrequent before the birth of the child, but examination will always detect the preparatory changes which accompany the course of pregnancy, and which are described in all the textbooks of obstetrics. They are indeed mentioned as a reliable help in cases where the diagnosis of conception is open to doubt. Equally free from variation are the events of the first few days following delivery. A sensation of fulness or discomfort, accompanied by a demonstrable enlargement and rise of temperature in the gland, is followed by a free discharge of milk on the third, fourth, or fifth day. Up to this point evidence in favour of uniformity of function is practically without exception. It is with the difficulties which supervene thereafter that we are concerned, and this fact in itself suggests that it is into the traditional methods of nurture that investigation must first be pursued.

It is not the purpose here to enter into the conditions in which the breast may be expected to share in a general lowering of bodily health. That such cases exist and are justifiably recognised as indications to wean the child, is sufficiently well known. Thus the complication of pregnancy by one of the severe toxæmias; by hæmorrhage, starvation, morbus cordis, or tuberculosis; the existence of some grave degree of post-parturient illness; these and other conditions which lower all the vital functions, may reasonably be expected to lower also the secretory activity of the breasts. But such conditions, with the exception of starvation, are rare and need not concern any general investigation into the normal behaviour of the mammary glands. Nor need space be devoted to abnormalities such as depressed or inverted nipples, which will mostly yield to careful treatment applied during pregnancy; to fissures and the sepsis of which they are the precursors, for they are preventable; or to the pain of suckling described by Dr. Naish which is apparently variable, as is the fortitude with which it is resisted by the individual. The presence of one or more of these features is an accidental circumstance in which the proper function of the breast may be obscured. But to explain the numerous failures in which none of them exist it is necessary to consider a completely separate set of factors.

The first of these factors is the failure to pay enough regard to the periodic character of the secretion. It is not always easy to demonstrate in primigravidæ until suckling has continued for some three or four weeks. In multigravidæ, on the other hand, its occurrence is often recognisable much earlier. For its establishment all that seems necessary is the regular stimulation of suckling with a sufficient interval between the infant's meals. If this be observed the woman will become aware of a sensation which is variously described as a rushing, tearing, or painful stabbing in the breasts, known as the "draught" and experienced as soon as the child's mouth is applied to the nipple. In some the breasts can be observed to swell and become tense where a few moments earlier they were flaccid and apparently empty. There is in all probability a contractile muscular element in the occurrence, but there is also an undoubted secretory activity, for milk runs spontaneously from the nipple. In cases where the periodicity is firmly established the engorgement may even occur at the appointed time without the breast being stimulated

[1] Pierre Budin: The Nursling, authorised translation by W. J. Maloney, 1907.
[2] Eric Pritchard: The Physiological Feeding of Infants.
[3] David Forsyth: Breast Feeding—the Consumption of Breast Milk, THE LANCET, June 14th, 1913, p. 1656.
[4] Lucy Naish: Breast Feeding—its Management and Mismanagement, THE LANCET, June 14th, 1913, p. 1657.
[5] Disney H. D. Cran: Breast Feeding—Dr. Variot's Teaching, THE LANCET, June 14th, 1913, p. 1659.

by suckling; the flow lasts for a few minutes and then ceases. The experience of the "draught" early in lactation is undoubtedly helped by the strong suction of a healthy child. But it can quite well be demonstrated when the baby is weakly and premature, provided the proper requirements, to be mentioned later, are borne in mind. Its maintenance throughout the course of lactation is perhaps the surest sign that breast feeding has been normally carried out, and this is reflected in the almost invariable progress of the infants so fed. Conversely, in all cases where a child has taken the breast for a few weeks and the "draught" is only felt occasionally or not at all, suspicion should be roused that the régime is not satisfactory. Until this is regulated to meet the physiological requirements of the gland, the opinion should be withheld that successful breast feeding is not feasible.

The foregoing leads directly to a consideration of what methods are and what are not calculated to obtain the optimum secretion of milk. The problem is best approached from the maternal aspect. For if attention is focussed on the child alone there is a tendency to take for granted that a failure to gain in weight, dissatisfaction with its meals, disorders of digestion, sleeplessness, or other similar ailments are in themselves evidence that the breasts are not up to the task of providing food of suitable quantity or quality. A combination of these misdemeanours is a strong indication that the food-supply does not fulfil its requirements, and there can be no question at all that too frequent suckling is the commonest cause of its impoverishment. The custom of urging women to feed their infants at two-hourly intervals nine or ten times during the 24 hours is responsible for weaning in an enormous number of cases. The only basis that can be found for the prevalence of so unexceptionally bad a maxim is the anatomical view that the stomach of a newborn child is so small that it needs frequently refilling. Probably the customary supervision by practitioner or nurse, which seldom extends beyond a month, has been partly responsible for the failure to detect the disastrous results to which the rule leads. A month is about the limit of time for which a woman can endure the two-hourly imposition, and when about then the signs of ailing are obvious the breast milk is blamed rather than the rule which, backed by the sanction of high authority, has been responsible for the trouble. In seemingly contradictory cases where the child is thriving, a careful inquiry will usually discover that, though the rule was carried out at first the sheer impossibility of obedience has led to its fracture, and a far longer period has been allowed to elapse between the feeds. In the case of the obedient it will be found that the "draught" which was felt regularly during the first few weeks became less and less noticed, and the reflex overflow from one breast which normally occurs when the other is taken by the child has ceased. The infant is restless and dissatisfied, cries at the breast, and even refuses to suckle, the stools are infrequent, and the weight is stationary. In these circumstances, to increase the interval between the feeds is not so obvious a step as to supplement them, for clearly the child is hungry and the breast milk is actually poor both in quality and quantity. The comparative peace which follows the administration of a bottle convinces the parents and obscures the issue beyond elucidation or correction.

The gain in weight recorded on Chart 1 exemplifies a case of the sort just mentioned. Said to have weighed over 8 lb. at birth, the child when first seen at the age of 14 weeks was wasted, ravenously hungry, and had by its screams driven its parents almost distracted. The mother, a frail, poorly nourished woman, 40 years of age, applied for advice in great perplexity, being quite unable to afford the expense of the artificial feeding which had been ordered. The only alteration which could be made was to substitute 7 meals for the 10 or 11 which had been given. The weight is seen to rise rapidly, and easily surpasses the curve plotted by Budin which is printed on the chart, and which was considered by him to represent a normal rate of progress. After a week the number of meals was reduced to 6, and again a week later to 5. At the eighteenth week they numbered 4 in 24 hours, on which number the child throve until weaned at the tenth month. Almost as noticeable as its contentment was the gain in the woman's health, due in large measure to her improved rest by night.

Chart 2 shows a very usual rate of gain in weight when the plan of giving infrequent meals is started from birth. In this case 6 meals was the daily allowance until the sixth week; then 5 were given until the tenth, and after that date 4 only in 24 hours. During the fourth week the infant developed a severe suppurative mastitis, which had to be incised freely under anæsthesia. The mother of this child had the advantage of being able to afford better food than the one quoted in the first case. She was also younger and in better health.

The method has, at any rate, the advantage of decreasing the burden on the mother. Thus, over a period of 45 days quoted by Dr. Forsyth in his experiment, 413 feeds were taken by the child, the daily number varying from 7 to 11 and averaging 9. Over the same length of time the infant whose weight in Chart 2 is quoted above took 255 meals —a saving of 158 to the mother in little more than six weeks.

These two cases suggest that the breast tissue fulfils the physiological law that to obtain the maximum output of work a suitable stimulus must be applied at a suitable interval. The suggestion finds strong reinforcement when the amount of milk obtained at individual meals is estimated. In some hundreds of cases where test meals have been taken their size has been found to increase as the frequency of their administration has fallen. Further, it has been found over and over again that the total quantity in 24 hours is greater when the number of meals given is 6 rather than 9 or 10, and greater still when the 6 give place to 5 and 4. In so far as these experiments have gone, it would seem that this change to the smaller numbers can be made about the sixth or eighth week.

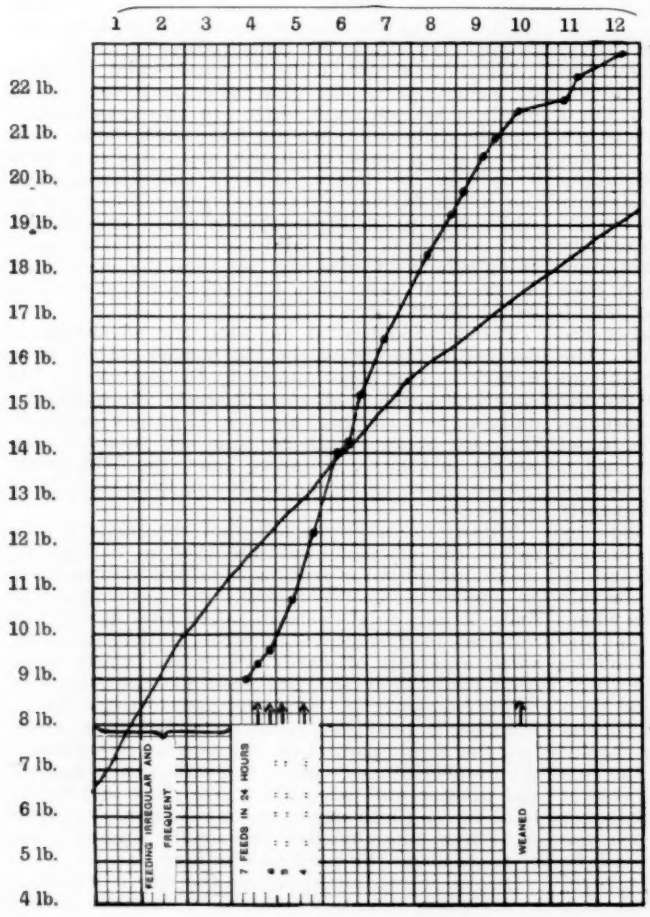
Before proceeding to discuss the results obtained by weighing infants before and after their meals, it will be convenient to consider the capacity of the infantile stomach. Whether or no the breast milk ingested stays for long in the stomach itself, or whether the majority passes rapidly into the bowel is not easy to determine. Absorption of water, an essential factor in the rapidity of growth which takes place during the first months of life, is probably no part of the stomach's task. In the young of man, of the apes, of monkeys, and of certain other animals the relative capacity of the stomach and intestines is well adapted to this arrangement, as is the flocculent nature of whatever curd is formed in gastric digestion. In the ruminant herbivora and carnivora the breast-milk forms a solid clot on curdling, needing prolonged gastric digestion; in the horse, the ape, and in man

the curd is more flocculent and its passage into the intestine rendered easy and rapid. Chalmers Mitchell,[6] taking 100 to represent the total cubic capacity of the digestive tract, gives the following proportions for newborn in certain mammalians:—

	Cubic capacity.	
	Stomach.	Intestines.
Ruminant herbivora	70	30
Carnivora	70	30
Herbivora	10	90
Man, apes, monkeys	20	80

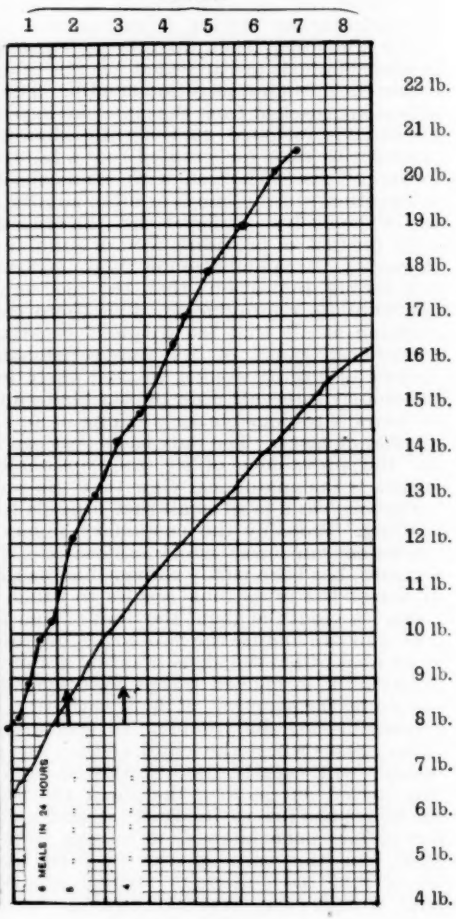
The work of Lewis[7] and Jefferson[8] on the musculature of the stomach suggests both the presence and activity in man of an arrangement of fibres which exert a canalising influence on the organ. The function of this "canalis gastricus" in other animals is to conduct fluid directly from the cardiac to the pyloric orifice, and there are certain features about the way in which infants feed quite compatible with the presence of some such mechanism. The size of their meals will be referred to later. At this point it is worth recalling what happens in cases where obstruction exists in the region of the pylorus. In spasmodic closure or in hypertrophic stenosis, waves of contraction can be seen immediately fluid enters the empty stomach, and unless its passage into the duodenum is effected vomiting soon follows. It is not improbable that in normal circumstances a large part of the milk follows the same course without any appreciable delay in the stomach. These facts point to the conclusion that measurement of the cubic capacity of the stomach, by post mortem or other methods, is more likely to indicate the length of sojourn of the food therein than to provide a reliable guide to the amount which can be taken and assimilated at a single meal. It is important that this should be appreciated, for, as will be shown, if wide intervals elapse between the meals the size of the meals themselves becomes far larger than is compatible with the view usually held about the gastric capacity. A more trustworthy guide remains in the behaviour of the infant, and it is perhaps on this score that the strongest indication presents itself for adopting infrequent meals with an ample interval for digestion. A baby in whom there are no signs of digestive disturbance, who shows no

CHART 1.



Record of weight gained by breast-fed infant on adoption of less frequent meals. The unbroken line is Budin's curve of normal progress.

CHART 2.



Case of infant on infrequent meals from birth. The unbroken line is Budin's curve of normal progress.

[6] P. Chalmers Mitchell: The Childhood of Animals.
[7] Frederick T. Lewis: The Form of the Human Stomach, American Journal of Anatomy, vol. xiii.
[8] Geoffrey Jefferson: The Human Stomach and the Canalis Gastricus, Journal of Anatomy and Physiology, vol. xlix.

objection to waiting many hours for its food, and who is gaining weight rapidly and developing strongly, fulfils the canons of good behaviour. This behaviour depends for its possibility on the maintenance of an adequate supply of milk.

The 10 or 11 meals which are still enforced in many maternity hospitals take little account of, though they are largely a contributory factor to, the high delicacy rate which is observed amongst infants whose mothers have had the benefit of delivery in these institutions. The strain on the breasts begins to have its baneful effect after about a fortnight or three weeks—that is to say, shortly after the patient's discharge from hospital. It is noticeable, too, that this corresponds to the statement often made that the milk "failed" when the woman got up and took on household duties. Indeed, it frequently happens even earlier, and the suggestion that the gland is primarily at fault is strengthened in hospital by the manufacture of bottle-feeds by the nurses, the contents of which are added to the 10 daily meals. So, too, the pathologist's report that the milk is markedly deficient in fat is again accepted as the fault of the breast and not thought to be a possible result of overtaxing its capacities. Nor can the view be accepted that the smaller the infant, as in cases of prematurity, the more frequently must it be fed; for it presupposes more rapid powers of digestion in the weakly than in the strong. The requisite interval must be allowed, and this holds good for small twins where, in view of the double demands made on the breast, special care must be taken.

Turning to the question of the size of individual meals, detailed experiments are not easy to carry out over long periods; but permission was obtained to conduct a series of test meals in one case, and the results are here given side by side with those for the first five weeks of Dr. Forsyth's observations. It is clear that the importance of individual differences may be exaggerated in comparisons made between two cases, and from so small a number no very conclusive inferences can be drawn. But certain interesting figures are given which, even with this allowance, lend support to the arguments already outlined. The experiment in the case marked B could not be prolonged beyond five weeks. The mother and child were both averagely healthy; pregnancy, labour, and lying-in were all uneventful. Briefly summarised, there was a difference of 15 oz. in weight at birth. A was put to the breast 279 times and B 186 times in five weeks; yet B obtained 692 oz. of milk to A's 528, or 164 oz. more with a saving of 93 meals to the mother. Here a difference must be mentioned, however, for B was put to both breasts at each feed, and Dr. Forsyth states that the child in his experiment was never given more than one at each feed. The reason for this is not clear, for the "draught" occurs simultaneously in both breasts. The weekly amount is given in the following table with the daily average for each week:—

TABLE I.—*Weekly Consumption of Milk.*

Week.	Total milk.		Daily average.	
	A	B	A	B
1st*	26½ oz.	37 oz.	9 oz.	12 oz.
2nd	128 ,,	122 ,,	18 ,,	17 ,,
3rd	106 ,,	151 ,,	16 ,,	21 ,,
4th	116 ,,	182 ,,	16½ ,,	25 ,,
5th	152 ,,	201 ,,	22 ,,	28 ,,

* Three days only.

The steady increase of 30 oz. per week in the case of B will at once arrest attention. The fact that during the second week A obtained more milk than B is noteworthy, for it shows there is no reason to claim for the latter's mother any functional superiority in the power of yielding milk. The superiority which is established during the third and fourth weeks is due in all probability to the number of meals suiting the requirements of the breast and of the infant. That this was not so in the case of A is seen by the yield in the third and fourth weeks being below that in the second.

Taking the daily consumption of milk in the fourth week the following figures appear:—

TABLE II.—*Daily Consumption of Milk in Fourth Week.*

Day.	Total consumption.		Day.	Total consumption.	
	A	B		A	
22nd	13½ oz.	26½ oz.	26th	20 oz.	26 oz.
23rd	12½ ,,	24½ ,,	27th	18½ ,,	27½ ,,
24th	19 ,,	24½ ,,	28th	17 ,,	27½ ,,
25th	15 ,,	25½ ,,			

The closer resemblance in the size of B's meals points to the uniformity of secretion and probably of the infantile appetite.

It is clear that by this time the smaller child (B) is taking larger quantities, though having fewer meals than the bigger child. The next table, showing the average size of individual feeds, is also in favour of B.

TABLE III.—*Average Size of Feed.*

Week.	A	B
1st	1 oz.	2 oz.
2nd	2 ,, ...	3 ,,
3rd	1¾ ,, ...	3½ ,,
4th	1¾ ,, ...	4¼ ,,
5th	2¼ ,, ...	4¾ ,,

The largest and smallest feeds are next compared:—

TABLE IV.—*Largest and Smallest Feeds.*

Week.	Largest feed.		Smallest feed.	
	A	B	A	B
1st	2 oz.	3¾ oz.	¼ oz.	1 oz.
2nd	4½ ,,	3¾ ,,	¼ ,,	2¼ ,,
3rd	4½ ,,	5 ,,	¼ ,,	2½ ,,
4th	3½ ,,	7 ,,	½ ,,	3 ,,
5th	3½ ,,	6 ,,	1 ,,	4 ,,

The contrast in the results of the two methods is perhaps best brought out by a table which shows the total amount of milk taken each week and the number of meals given to each child:—

TABLE V.—*Weekly Consumption and Number of Meals.*

Week.	A		B	
	Number of meals.*	Amount taken.	Number of meals.	Amount taken.
1st	27	26½ oz.	18	37 oz.
2nd	63	128 ,,	42	122 ,,
3rd	63	106 ,,	42	151 ,,
4th	63	116 ,,	42	181 ,,
5th	63	152 ,,	42	201 ,,

* The number is based on an average of nine per diem.

From this it can be calculated that A takes 528 oz. in 279 meals—an average of just under 2 oz. per meal, while B takes 692 oz. in 186 meals, or an average of just under 3¾ oz. per meal.

Thus it appears that the daily and weekly consumption and the average size of the feeds are in B's favour. To this must be added the fact that A weighed 8 lb. 2 oz. at birth and gained 2 lb. 4 oz. in 44 days. B weighed 7 lb. 3 oz. at birth and gained 2 lb. 1 oz. in 35 days.

To those who have not employed the weighing machine in this kind of work, it may come as a surprise that a child can take 7 oz. of food from the breasts at one meal as early as the twenty-first day. Many other examples could be given showing that this is not an abnormally high record. As an instance of what occurs later, the case whose weight has been given in Chart II. may be quoted. From time to time the child was weighed before and after each meal given over a period of 24 hours. At the twelfth week 33 oz. were taken, at the eighteenth 41 oz., and at the twenty-third 48 oz. The figures for the individual meals making up the last total are interesting, but not exceptional. The woman was a primigravida.

TABLE VI.—*Amount taken in 24 Hours at Twenty-third Week.*

Time.	Amount.	Time.	Amount.
6 A.M.	14 oz.	6 P.M.	11 oz.
10 A.M.	12 ,,		
2 P.M.	11 ,,	Total	48 oz.

If appetite be considered as an expression of digestion the figures given suggest that large infrequent meals do not disagree with quite young infants. A long sleep at nights is of the greatest value to the mother, particularly if lactation is to be prolonged for eight or ten months. There is no better way to obtain it than by this method. The infant just mentioned would sometimes sleep 14 hours at a stretch if not disturbed. In all cases care must be taken to remove two common barriers to the success of this or any other plan for feeding infants—tight and superfluous clothes and insufficient ventilation. With these precautions, and with the mind relieved of the need for slavish obedience to conform to a custom which has no scientific basis either on the maternal or the infantile side, it is quite easy for any woman to find out how often her child requires feeding. If allowed to be comfortable in other ways the child will give unmistakable signs of hunger when digestion and assimilation have proceeded to the right point. The cry of the overfed—i.e., of the too frequently fed—is commonly mistaken for the cry of hunger. When an infant shows the soundness of its instinct by refusing a sequence of rapidly proffered invitations to feed, it is thought at once, perhaps by analogy with adult behaviour, to be ailing; and this despite every other appearance of health. Or when, with misplaced confidence in the knowledge of its elders, it accepts and pays the penalty in pain, vomiting, and colic, the resultant screams only lead to further misunderstanding to which the bottle is the usual solution offered.

To quote Dr. Forsyth again: "With no means of increasing or modifying the natural supply, bottle-feeding is the first and only resource when an infant fails to thrive on breast milk." In the case of those who can afford to pay a nurse to devote her entire time to the preparation of the infant's food and attend to its needs in other directions the change can be effected with the minimum of danger. Even so the health and physique of an artificially reared child are seldom comparable to those of one satisfactorily reared on the breast. The fact that so many hold this statement to be unproven is an indication of how rarely successful breast feeding comes under the notice of the medical profession.

Artificial feeding in its present stage of development is a science needing a considerable knowledge of bacteriology and physiological chemistry. In the light of present events the annual statistics of infant mortality published by the Registrar-General and the tremendous delicacy rate amongst survivors which they imply can hardly be dismissed with complacency. Nor can the problems of lactation be allowed to remain where they are left by the above quotation. A return of the summer heat of 1911 will witness just such another holocaust of young lives as occurred in that year. And this not necessarily because of any hereditary weakness, but chiefly, almost solely, on account of the inapplicability of artificial feeding to the masses. The institution of normal, uninterrupted, and successful breast feeding until an age at which milk no longer forms the chief constituent of the infant's diet has assumed an aspect of importance worthy to rank beside any of the great issues with which the country is faced.

Cheyne-walk, S.W.

THE BINET-SIMON METHOD AND THE INTELLIGENCE OF ADULT PRISONERS.

BY M. HAMBLIN SMITH, M.R.C.S. ENG., L.R.C.P. LOND.,
MEDICAL OFFICER, H.M. PRISON, PORTLAND.

THIS paper deals with the Binet-Simon method as applied to the estimation of the intelligence of adult prisoners, and the diagnosis of mental deficiency. Since the publication of Dr. W. C. Sullivan's paper in THE LANCET,[1] I have devoted a considerable amount of attention to this subject. The Binet-Simon method is now so well known in this country that a detailed description would be out of place. But, briefly, it consists of a number of tests arranged in groups of five, each group corresponding to the average standard of intelligence of some particular age. And the tests, at the ages used by me, are as follows:—

7 years.—1. Place right hand on left ear. 2. Describe an engraving. 3. Do three simple errands. 4. Count three pennies and three halfpennies. 5. Name four given colours.

8 years.—1. Make mental comparison between objects—e.g., fly and butterfly, &c. 2. Count from 20 to 0. 3. Point out missing features in incomplete figures. 4. Give the date. 5. Repeat five numerals.

9 years.—1. Take 2*d.* out of a shilling and give the change. 2. Define common objects, otherwise than by use. 3. Identify current coins. 4. Name the months. 5. Answer simple questions involving everyday problems.

10 years.—1. Arrange five boxes according to weight. 2. Copy two simple geometrical figures from memory. 3. Criticise a number of absurd statements. 4. Answer questions similar to, but more difficult than, those in the last group. 5. Bring three given words into two phrases.

12 years.—1. Resist a visual suggestion made by pairs of unequal lines followed by pairs of equal lines. 2. Bring three given words into one sentence. 3. Say more than 60 words in three minutes. 4. Define abstract words. 5. Rearrange a simple sentence, the words of which are in disorder.

15 years.—1. Repeat seven numerals. 2. Find three rhymes for a given word. 3. Repeat a sentence of 26 syllables. 4. Interpret an engraving. 5. Explain an unfinished account of a common episode.

[1] THE LANCET, March 23rd, 1912, p. 777.

The method was originally devised for use with children of school age. But it obviously provides a very convenient means by which to measure and compare the standards of intelligence attained by adults. And it is at the present time used to a considerable extent by those who are required to form an opinion as to the feeble-mindedness or otherwise of a subject.

The work on which the facts given in this paper are based was done during the time that I was serving as medical officer of Stafford Prison. A large number of prisoners of every class came under my care and observation there; the number of men was, however, much larger than that of women. I did not confine my investigations to the mentally defective, but have tried the method with prisoners of every kind, and I venture to hope that my results may be of interest, at least to those who are engaged in similar work.

I have applied the method to prisoners of all ages. But in the majority of male subjects over 25 years of age I found it difficult to obtain results which could be regarded as trustworthy, and this is also true, though in a lesser degree, for females. I do not mean that trustworthy results are never obtainable in subjects over the age of 25 years, but the interest and coöperation of the subject (and unless these are obtained the results are worthless) are much more difficult to elicit when he or she is above 25 years of age. And of the results tabulated here for subjects over 25 years of age many were obtained in subjects between that age and 30 years. It is now almost universally admitted that prisoners below the age of 25 years (technically known as "juvenile adults") are far more amenable to reformatory influences of various kinds than older offenders. And my experience seems to indicate that this limit of 25 years represents no mere arbitrary standard, but corresponds to a real difference of intellectual character. At least, this is so in the case of males; there is good reason for extending the limit to 30 years in the case of females.

I have tabulated and analysed the results obtained by the method in 160 cases (80 consecutive males and 80 consecutive females). In all these cases I considered the results to be trustworthy.

TABLE I.—*Giving the Number of Prisoners in Various Classes and the Average Standard of Intelligence in Each Class.*

	Males.				Females.			
	Feeble-minded.		Not feeble-minded.		Feeble-minded.		Not feeble-minded.	
	No. of cases.	Average standard of intelligence.	No. of cases.	Average standard of intelligence.	No. of cases.	Average standard of intelligence.	No. of cases.	Average standard of intelligence.
		Years.		Years.		Years.		Years.
Under 25 years of age	23	9¼	29	11¼	16	9⅔	15	11
25 years of age and over	26	9	2	10	31	8⅔	18	10⅔
Totals	49	9⅛	31	11⅓	47	9	33	10⅛

In calculating the level attained by any particular subject I have adopted the suggested convention—that is, where a subject, for instance, passes in all the tests for 8 years, in two of the tests for 9 years, and in one test for 10 years, he is estimated as having reached a standard of 8⅔ years. But there is a gap of two years between 10 and 12, and a gap of three years between 12 and 15. I have, therefore, reckoned the tests for 12 years and 15 years as equivalent, respectively, to two-fifths and three-fifths of a year each.

It will be noticed that the differences between the average standards attained by corresponding male and female classes of subjects are very slight.

I classed my subjects as "feeble-minded" and "not feeble-minded." I have carefully avoided describing the latter class as "normal." Before classing a subject as "feeble-minded" a full and careful clinical study of his or her case has to be made, and the previous history considered. Many factors in the case have to be reviewed, particularly the subject's will-power and emotional reaction, as well as the degree of intelligence, before a diagnosis of "feeble-mindedness" can properly be made. The cases which I have so classed were officially reported by me as being mentally defective. And all these cases should be dealt with as defectives. Many could now be so dealt with under the Mental Deficiency Act. I have never classed a case as feeble-minded upon lack of intelligence alone. Three of the males and three of the females were undoubtedly intellectual imbeciles. On the other hand, three (one male and two females) attained a level of 11 years or higher on the scale. The male was an interesting case. He was a lad aged 20 years who reached a level on the scale of well over 14 years. He had been respectably brought up, but owing to lack of will-power he had already become a chronic drunkard. I may mention, incidentally, that he was being treated by the usual futile short sentences of imprisonment. The females were aged 18 and 24 years respectively, and attained a level on the scale of between 11 and 12 years. They were low-class prostitutes. These three cases could be described as "moral imbeciles."

Among the non-feeble-minded there were many who reached a fairly high level of intelligence, but the general average was brought down by a number who were unintelligent to a marked degree. There were 21 cases (9 males and 12 females) who failed to reach the standard of 10 years, and of these one male and two females failed to reach the standard for 9 years. But, after consideration of the points which I mentioned above, none of these cases could properly be classed as "feeble-minded."

No deductions are to be drawn from the large proportion (60 per cent.) of feeble-minded among my 160 cases. To apply the method to any subject takes a considerable amount of time, if an accurate result is to be obtained. As a consequence, the number of cases which I was able to test was subject to limitations. But it was obviously necessary to apply the method in every case in which any suspicion of feeble-mindedness existed. Hence the preponderance of such cases among my 160. It is to be hoped that we shall at some future time be in possession of a large number of results obtained from subjects (prisoners and others) of a more normal mental level. There is a great opening for work with this method among young adults of various classes in ordinary free life.

Tables II. and III. exhibit some of the main results of my observations.

I have certain criticisms and remarks to make upon the tests in detail. The method was, of course, devised for use with children of school age, and I am of opinion that it needs some modifications when applied to even young adults. Let us take the tests in order from the earlier years onwards.

7 years.—The tests are all very easy, and I had no failures, except among the intellectual imbeciles.

8 years.—Test 2 (count from 20 to 0) is an excellent discriminating test for feeble-mindedness; 20 per cent. of that class failed; none of the

non-feeble-minded failed. In Test 4 (give the date) I allowed a fair amount of latitude in the answer, but even then 15 males and 15 females failed completely. Test 5 (repeat five numerals) is a test of memory and attention, and in my results here one sees the fore-shadowing of the failures in the more difficult tests of similar character for 15 years.

9 years.—I consider that Test 1 (take 2*d.* from 1*s.* and give the change) and Test 3 (identify current coins) are much too easy for any adult differed entirely from that which I derived by trying this test upon personal friends. Test 4 (answer difficult questions) I consider to be unsatisfactory. Some of the suggested questions seem to me to be too "metaphysical." For example, consider the suggested questions, "Why do we pardon a wrong act done in anger more readily than a wrong act done without anger?" and "Why ought we to judge a person by his acts rather than by his words?" Test 5 (put three given words into two

TABLE II.

Giving the Numbers of Prisoners in Different Classes who failed at each Particular Test.

—	Males.					Females.				
	Feeble-minded.		Not feeble-minded.			Feeble-minded.		Not feeble-minded.		
	Under 25 years.	25 years and over.	Under 25 years.	25 years and over.	All male cases.	Under 25 years.	25 years and over.	Under 25 years.	25 years and over.	All female cases.
No. of prisoners in the class ...	23	26	29	2	80	16	31	15	18	80
7 years. Test 1	3	—	—	—	3	1	2	—	—	3
,, 2	—	—	—	—	—	—	1	—	—	1
,, 3	—	—	—	—	—	1	1	—	—	2
,, 4	1	—	—	—	1	—	2	—	—	2
,, 5	1	—	—	—	1	—	1	—	—	1
8 years. Test 1	3	5	—	1	9	2	8	—	—	10
,, 2	6	4	—	—	10	3	7	—	—	10
,, 3	4	2	—	—	6	2	9	—	—	11
,, 4	7	4	3	1	15	3	12	—	—	15
,, 5	8	4	—	1	13	3	11	1	—	15
9 years. Test 1	3	1	—	—	4	1	5	—	—	6
,, 2	14	18	4	—	36	11	23	5	5	44
,, 3	1	1	1	—	3	2	5	—	—	7
,, 4	8	7	2	1	18	2	10	1	—	13
,, 5	1	4	1	1	7	1	8	—	—	9
10 years. Test 1	12	18	11	2	43	10	26	8	9	53
,, 2	9	14	2	—	25	9	26	4	8	47
,, 3	20	22	10	—	52	12	24	6	9	51
,, 4	19	19	12	1	51	12	25	5	7	49
,, 5	19	24	13	2	58	12	30	9	14	65
12 years. Test 1	15	22	13	2	52	12	24	7	7	50
,, 2	21	25	16	2	64	15	30	10	15	70
,, 3	21	25	17	2	65	16	30	15	15	76
,, 4	21	21	13	—	55	13	28	5	7	53
,, 5	17	23	9	—	49	11	29	8	11	59
15 years. Test 1	20	25	18	2	65	13	31	11	18	73
,, 2	22	26	20	2	70	14	31	14	18	77
,, 3	22	26	26	2	76	16	31	15	18	80
,, 4	21	24	12	1	58	13	30	5	11	59
,, 5	23	25	18	2	68	16	31	11	13	71

TABLE III.

A.—*Giving the Percentage of Subjects of each Class who Failed at the Different Tests.*

B.—*Giving the Number of Failures at Particular Tests among Subjects who had done all the other Tests in that Group.*

—	A.				B.			
	Males.		Females.		Males.		Females.	
	Feeble-minded.	Not feeble-minded.	Feeble-minded.	Not feeble-minded.	Feeble-minded.	Not feeble-minded.	Feeble-minded.	Not feeble-minded.
7 years. Test 1	6	—	6	—	1	—	1	—
,, 2	—	—	2	—	—	—	1	—
,, 3	—	—	4	—	—	—	—	—
,, 4	2	—	4	—	—	—	—	—
,, 5	2	—	2	—	—	—	—	—
8 years. Test 1	16	3	21	—	—	—	—	—
,, 2	20	—	21	—	1	—	1	—
,, 3	12	—	23	—	—	—	—	—
,, 4	22	13	32	—	1	3	1	—
,, 5	24	3	30	3	—	—	—	1
9 years. Test 1	8	—	13	—	—	—	—	—
,, 2	65	13	72	30	13	2	19	10
,, 3	4	3	15	—	—	—	1	—
,, 4	30	10	26	3	3	—	—	—
,, 5	10	6	19	—	1	—	—	—
10 years. Test 1	61	42	77	52	2	1	1	—
,, 2	47	6	74	36	—	—	—	1
,, 3	86	32	77	45	—	—	—	1
,, 4	78	42	80	36	—	—	—	—
,, 5	88	48	89	70	2	2	—	2
12 years. Test 1	76	48	77	42	—	1	—	—
,, 2	94	58	96	76	—	—	—	—
,, 3	94	61	98	91	—	1	—	1
,, 4	86	42	87	36	—	—	—	—
,, 5	82	29	85	58	—	—	—	—
15 years. Test 1	92	65	94	88	—	—	—	—
,, 2	98	71	96	97	—	—	—	—
,, 3	98	90	100	100	—	3	1	—
,, 4	92	42	91	48	—	—	—	—
,, 5	98	65	100	73	—	1	—	—

who moves at all in the world. On the other hand, Test 2 (define objects—e.g., chair, horse, fork—otherwise than by use) is, I think, too difficult. Many of my subjects failed to grasp the idea, and many failed to pass in this test who would otherwise have succeeded in all the tests of this group. Of course many of the failures were among the feeble-minded. Still a great deal of explanation has to be entered into, and, on the whole, I think that this test needs modification. Test 4 (name the months) is a good discriminating test. Nearly all the failures were among the feeble-minded.

10 years.—Test 1 (arrange weights in order) and Test 2 (copy figures from memory) were distinctly better done by the males than by the females. So far as the weight test is concerned this experience phrases) may be useful for children who are in the habit of working such problems at school, but I regard it as unsuitable for adults.

12 years.—Test 2 (put three given words into a phrase) is open to the same objection as the last test which I mentioned, but in a stronger degree. Test 3 (say more than 60 words in three minutes) must be considered with due regard to the very limited vocabulary of the class with whom I am now dealing. It is a question whether, as it stands, it is not too hard. Test 5 (rearrange phrases in disorder) is the only test which presupposes ability to read. Eight of my subjects (five males and three females) were illiterate. I awarded them marks as if they had passed this test; this seemed the fairest plan. With regard to Test 4 (define abstract words—e.g., charity, justice, kindness) other observers have

informed me that with children this is a test in which more fail than in any other test of this group. Perhaps my comparatively high percentage of successes indicates that the experience of life tends to make this test easier. One caution is needed with respect to the word "charity." Certain religious catechisms contain a definition of this word, and the subject may repeat this definition glibly, but with obviously little comprehension of its meaning. This, of course, would be a test of memory only.

15 years.—Tests 1 and 3 (repetition of seven numerals and of a sentence of 26 syllables) were very badly done, especially the latter, in which not one female succeeded. In Test 2 (finding three rhymes to a given word) the non-feeble-minded lads did much better than the corresponding class of girls. I believe certain popular newspapers have competitions of this nature. Perhaps the boys practise such things more than girls do. In Test 5 (explaining a common episode) one of the suggested episodes (the lawyer, doctor, and clergyman who are seen to arrive at a neighbour's house), seems too obvious; while another suggested episode (an object on a tree in a forest which caused a man a terrible fright and made him run for the police) is too difficult. The absurd answers which I obtained to this problem, even from persons of quite good intelligence, were almost incredible.

I have certain alternative or supplementary tests to suggest.

1. The enumeration of the different classes of men and women who are seen in the streets in uniforms. I think that a person of fair intelligence should mention at least nine. Some allowance must be made in the case of a subject from a country village, where a smaller variety of uniforms would be seen than in a town. I suggest this test (which I adopted from Dr. W. H. B. Stoddart's "Mind and its Disorders") as an alternative for Test 5 of 10 years (putting three words into two phrases). My experience tends to prove that about 32 per cent. of non-feeble-minded and about 80 per cent. of feeble-minded fail at this test.

2. A test of judgment of size. Show the subject a cardboard circle of about 4 inches in diameter. Then show him a cardboard sector (say, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$) of a circle of similar diameter. Ask him what proportion this sector bears to the circle—i.e., in simple language, ask him how many sectors of that particular size he will require to complete the circle. I offer this as an alternative for Test 2 of 9 years. I have not sufficient results to give any figures for this test. Cardboard circles and sectors can be obtained from Messrs. George W. Jelfs, of Bromsgrove.

3. A small cardboard clock-face with movable hands can be had from the firm just mentioned. I think it would be a good test to ask the subject to place the hands in position for some specified times—e.g., 23 minutes past 8, or 19 minutes to 12.

One test suggested by a fellow-worker is to ask the subject to give the name of the Prime Minister for the time being. I tried this extensively, but the results were not encouraging. Hardly any could answer the question. Very few, indeed, had any idea as to what a prime minister was. And this occurred among those of my subjects who were in no way mentally defective. I give this as an instance of the care which must be taken to suit the tests to the mental environment (if I may be allowed the expression) of the class of subject with which one is dealing. Of course, among ordinary artisans, to say nothing of business or professional men, ignorance on this point would occasion grave suspicion as to the mental condition of the subject. Even ignorance of the name of the present King and inability to give even an approximation as to the length of time since he came to the throne are by no means uncommon among the class with which one deals in a local prison. And failure to reckon back from George V. to Edward VII., and thence to Victoria, was very frequent. Such was, at any rate, my experience at Stafford. It is very likely that observers in other districts might get quite different results, and such comparisons between similar classes in different districts would be of great interest.

Lastly, is there any standard of intelligence which marks off an adult who fails to reach it as definitely feeble-minded, and incapable of fending for himself under present-day industrial conditions? The question is one of great interest and of practical importance. The original suggestion was to fix 12 years as the upper limit of mental defect. Dr. T. Simon now appears inclined [2] provisionally to fix the limit at 9 years. If I had to draw a line, my limited observations would induce me to place it a year higher—i.e., at 10 years. Of my feeble-minded cases 78 per cent. failed to attain the 10 years standard, while only 40 per cent. failed to reach that of 9 years. None of my feeble-minded cases succeeded in *all* the 10 years group of tests, whereas 23 per cent. passed all the tests in the 9 years group, and 54 per cent. would have done so but for failing in the one test of defining objects otherwise than by use. But personally I am disposed to say that no definite line can be drawn. I have found very marked deficiency of intelligence in subjects whom I am sure no observer would think of calling feeble-minded, still less of recommending their detention as mental defectives. As I said before, only a complete clinical study of all the factors in the case, of which factors the degree of intelligence is but one, can justify a decision as to the feeble-mindedness of a given subject.

I would sum up my conclusions as follows: 1. The Binet-Simon method is an excellent means of estimating the standard of intelligence of any particular subject. 2. The method, having been primarily devised for use with children of school age, would be rendered more useful for adults if certain modifications were made in its details. 3. That defect of intelligence, as estimated by this method, affords strong confirmation of a diagnosis of feeble-mindedness made upon other considerations. 4. That failure to reach any given standard of intelligence is not of itself sufficient reason for regarding a subject as feeble-minded.

We urgently need more work with the method upon young adults of all classes, and I would earnestly plead for interchange of views among those who are working with the method in order that any necessary modifications may be agreed upon and all possible uniformity obtained.

My thanks are due to Dr. Sullivan for many helpful suggestions. And I wish to express my gratitude to, and sympathy with, those officers of Stafford Prison whose duty required them to be present at my examinations, and to whom the constant repetition of the same tests must have been monotonous and wearisome to a degree. I am indebted to the Prison Commissioners for permission to publish this paper.

Portland.

[2] See Eugenics Review, January, 1915.

WHAT TESTS IN CHILDHOOD ARE BEST CALCULATED TO THROW LIGHT UPON THE CAPACITIES OF MENTAL DEFECTIVES FOR FUTURE WORK?[1]

BY W. A. POTTS, M.A. CANTAB., M.D. EDIN.,
MEDICAL OFFICER TO THE BIRMINGHAM COMMITTEE FOR THE CARE OF THE MENTALLY DEFECTIVE.

IF there is anyone who has come here to-day hoping that I am going to reveal a series of simple tests by the use of which a careful investigator can decide whether a defective child will develop into a wage-earner, I am afraid that person will be disappointed. Those of you who have considered the problem I am approaching know how complex and difficult it is; you know also that the whole subject of mental tests is only in its infancy, and that the particular science which seeks to correlate ability before 16 with wage-earning capacity later is non-existent. Under these circumstances it might appear that a paper with this title would be of little use; I myself, however, and others also have refused to certify under the Mental Deficiency Act some defectives on the ground that they would ultimately be able to support themselves. Even if we arrived at this decision independently of the subject passing any particular test we must have had in our minds, albeit unconsciously, some means of measuring his capacity. Careful analysis should enable us to express the workings of our mind in such a way as to furnish a guide to others. At any rate, this subject is one of such interest and importance that suggestions can hardly fail to be welcome. For this purpose I have had access to more than one source of valuable information; the Birmingham After-Care Committee, of which I was chairman for ten years, being the first committee of its kind to be formed, and now having cognisance of more than 1000 cases, some of which it has watched over for 15 years, possesses records almost unique. More recently as medical officer to the Birmingham Committee for the Care of the Mentally Defective, one of the few statutory committees which have dealt with any considerable number of cases, I have had further opportunity of collecting facts to put before you.

There are several points of view from which to approach the problem; the most satisfactory decision would be attained by taking a large group who were submitted to many tests ten years ago and inquiring what tests those now supporting themselves passed, and in what directions the unsuccessful failed. This information, however, is not forthcoming. We are driven, therefore, to other methods, such as considering what are the causes of success and failure in the careers of normal individuals, and then, if we believe that these will operate also in the case of defectives, devising a set of tests to determine them. We may also take a group of defectives over 20 years of age, earning wages, and find what good qualities they have in common, comparing them with the group who are unemployed. Another plan would be to investigate all known tests and to decide which will be of service. I propose to say a few words about each of these methods.

As regard the causes of success and failure in life, the former, especially if it is to be marked, depends on the possession of four principal qualities: (1) ability; (2) strength of character and will-power, in which as a subsidiary should be included ambition; (3) good health; and (4) pluck. Moderate ability of certain kinds is not necessarily lacking in the feeble-minded; what particular form it must take I will discuss in a moment. The other characteristics enumerated are just as essential for success for defectives as for the normal. Most defectives are lacking in ambition; many see no reason why they should earn their own living; those who are avowedly anxious to support themselves, or to qualify as a soldier or a cook, have a driving power of real value. Good health is not always ranked among the essentials for success; I may be reminded that world-famous work has been accomplished by the victims of serious disease. This is true, but it is also true that it has only been done by the help of such ability or determination as is not likely to be found among defectives. This consideration leads to the important reflection that mental defect is in itself such a serious impediment that the unfortunate victim can afford to carry no other handicap. For this reason a useful decision as to prospects in after life can only be given by a medical man who is also a psychologist. After examining the child to make sure there is no defect of vision or hearing, or other defect of consequence, and no active or latent disease, the medical investigator requires for his final opinion a thorough knowledge of the family history and records, particularly with regard to the presence or frequency of consumption, insanity, epilepsy, asthma, and heart disease, and the ages at which they developed in previous generations. In order to emphasise the value of good physical condition, I may say that of the first 79 cases brought up to be dealt with under the Mental Deficiency Act that I examined, the 79, of course, all being failures, 38, or nearly 50 per cent., were suffering from active disease or some serious physical disability. This is confirmed by an investigation, to which I shall refer directly, into the careers of 68 defectives, 18 of whom were out of work; half of those out of work were suffering from disease or serious physical defect.

The last essential enumerated for success is pluck, a virtue the necessity for which is not always realised. Careful analysis will show, however, that many tragedies are due to lack of this quality. The man who is bound to win is not overwhelmed when an unexpected calamity overtakes him; still less he is haunted by those vague fears of impending disaster which cause so much distress to some weaklings, and which are particularly common in the feeble-minded. Courage is especially necessary for the feeble-minded, who otherwise furnish a ready butt for rough companions. I know a number of defectives who will not go to work because their mates play tricks on them or make fun of them. One of them is a musician fully capable of work in a music warehouse. On the other hand, one of the most successful defectives I have known was always free from annoyance of this kind; he was very powerful, and his companions stood in great awe of him. Pluck of another kind is essential for new or unusual work.

Conversely among the causes of failure are lack of ability, bad health, weak or bad character, and a faint heart. All these can be seen in operation in the history of defectives; among them bad morals rank high. Many are moral imbeciles, and that is why they ultimately drift into institutions.

[1] A paper read at the Annual Conference of the National Association for the Feeble-minded at the Guildhall, London, on June 25th, 1915.

There still remains an important consideration, the question of luck. Let me say at once that in ordinary life I attach but little importance to this element, believing that every normal individual has his chance, if only he will take it. No one, however, can read through a series of records of defectives without seeing that the conditions are different, and that luck, by which I mean the play of forces over which the subject has no control, often plays an important part. This element is, as I say, beyond the control of the individual, but can often be noticed and discounted by others. A schoolmistress told me that one defective earning wages was very stupid, and never could have earned anything unless he had had a very good mother, who was determined he should do something, and never rested until she had got him just the one situation he was fit for, a post as errand boy. The feeble-minded are frequently facile and unduly susceptible to extraneous influences; a kind master and a sympathetic teacher count for much more than with the normal. Repeatedly do I notice in the records "Has a particularly considerate master," or find that the situation is retained only because the employer is a friend of the family. The home conditions, too, are of fundamental importance; remember that the defective is in some ways a child always, and after he is 20 will often want some one to see that he goes to work punctually with his hands and face washed.

Turning now to the inquiry into the capacities of a group of defective wage-earners, as compared with the less successful, I took for my first investigation, as to how far success in after life could be foretold by the school records, a group of 68 defectives over 18 years of age, 50 of whom had situations, while 18 were not working. On studying the records for reading, writing, arithmetic, and manual work, it was obvious that aptitude for manual work was the essential. Dividing their attainments at school into three classes, I find that of those now at work 72 per cent. were first class at manual work, while of those not at work only 33 per cent. were good at manual. The importance of the manual record becomes even greater on closer examination, for every one of the non-workers who had been good at manual at school had an extra handicap, such as suffering from consumption or other disease, or being a cripple or a moral imbecile, so that his downfall might have been foretold. One boy was described as a stammerer and passionate, quite enough to account for a defective not retaining his situation. Further, 16 per cent. of the wage-earners were described as very good at manual, but not a single one of those not at work got that distinction. Again, excluding the 16 per cent. who were very good at manual, 30 per cent. of the other first-class ones were also first class in every department of their school work; of those out of work not a single one was first class at manual and also at all of the three "R's." We can say therefore that a defective who at school is either very good at manual, or merely good at manual and also at every school subject, is certain to get work afterwards, unless he has some serious disability in addition to mental defect. It is worthy of note that of those who were very good at manual, 12 per cent. were not good at every other subject, but this apparently does not matter. Of course, I use the words "good" and "first class" according to the standard for defectives.

As regards other school subjects, reading does not seem to be of much use as a guide; 50 per cent. of those at work were only second class, and just as big a percentage of the non-workers were also in that class; only 2 per cent. of workers were very good at reading, but 6 per cent. of non-workers got that distinction. Paradoxical as it sounds, if you are a defective it may be better not to be able to read at all, because then you may be a pure word-blind case, not defective all through, and may be very good at everything else and capable later on of earning good wages. The records show clearly that several of the best workers must have been merely word-blind, not an uncommon condition, as pointed out years ago by Dr. C. J. Thomas, though many teachers overlook, at any rate, the partial cases. The records do show that first-class readers have the best prospects, but reading does not draw the line as manual work does. Some of you will remember that a few years ago Mrs. Hume Pinsent deprecated the waste of time and energy involved in trying to teach many defectives to read.

Arithmetic gives a better clue; of those at work 55 per cent. were first class at arithmetic, 5 per cent. being very good; of those not at work only 13 per cent. were first class and none were very good. Writing is also some guide—at any rate, in a negative way; it is so much easier to teach a defective to write than to read or calculate that he must be of a low grade if he does not learn at all; 25 per cent. of those out of work were bad at writing, but only 5 per cent. of the workers were in the same class. 71 per cent. of the workers were good at writing, 15 per cent. being very good. Really writing may be looked upon as a form of manual work; some defectives can copy beautifully, but cannot read what they have written.

For my second investigation I took a larger group of cases: 61 workers over 20 and 51 non-workers over 16 years of age. These showed very much the same results: of those earning 20s. a week or more in this group 90 per cent. were good at manual and 63 per cent. very good. Scarcely any of the non-workers were good at manual; if they were there was usually some physical disability to account for their failure.

An important index to success after school is afforded by the fact that defectives who respond to special school teaching may be divided into three groups: (1) those who improve continually; (2) those who improve up to a certain age, 12 or 13, and then remain stationary; (3) those who improve till a certain age and then actually go back. This can be determined by the Binet tests, the best we have for the purpose at present. If the child is to achieve anything after school he must belong to the group that continually improves. Indeed, nothing is more remarkable in after-care records than the steady, though slow, progress of the majority of the best wage-earners. It is important the defective should improve after school age too; many of them get disheartened as they grow older and find they are unable to do better work and earn higher pay. Many of these careers could be foretold from the school records; even the great surprises can often be accounted for. One boy, now doing well, was hopeless at school: on inquiry I found that he suffered from fits till 10 years of age; the cessation of the fits explains his later development. It is only in rare instances that all calculations are upset; one surprise is a youth who was very bad at school in every way, but is now in the army, serving as a despatch-rider at the front. Many cases are now in the army and more than one is doing well; in the army, of course, there are the strict discipline and constant supervision defectives require.

Finally, as regards individual tests, among the simpler ones Warner's hand-balance is useful, at any rate from a negative point of view, weeding out some who will never hold their own in the world. It is a simple test, easily applied, but too unscientific for the up-to-date psychologist who will prefer something like the ataxiagraph, an elaborate instrument with small holes of various sizes in a brass plate; the subject has to hold a needle in one of the holes without touching the plate for 15 seconds. An electric battery is attached, and touching the plate makes a contact and causes a click, all contacts being recorded. Smaller holes are tried till the subject "has reached the limit of his capacity, and is clearly unable to keep the needle free from contact with the plate." Wallin found that among epileptics involuntary swaying was "clearly less" for the feeble-minded than for the imbecile group.

One of the best tests is with the dynamometer to measure the strength of grip, as an index of general bodily strength and of the superiority of one hand over the other. Several investigators have found a positive correlation between strength of hand and mental ability in the normal; among defectives the correlation seems to be even more definite, and Barr says (p. 162) that hand grasp and mental grasp go hand in hand. This instrument is also used to measure dextrality—i.e., the superiority of one hand over the other. There should be a marked difference in the strength of the two hands; defectives tend to be ambidextrous, having two inferior hands. I consider these two tests with the dynamometer the most valuable at present available.

Another good test, also having the advantage of simplicity, is with the form-board, familiar to most of you, from which ten different forms have been cut out. The ten blocks are placed at the side and the child has to fit them into the corresponding holes as quickly as possible, the time being recorded with a stop-watch. Goddard's investigations at Vineland show that there is a steady improvement with each year of mental age, the mental age being determined by the Binet scale. This test can also be used with the eyes blindfolded.

Quickness of movement as shown by rate of tapping has been much used, the rate being recorded by an elaborate apparatus; recent work would seem to show it is not a test of great value.

Aiming or precision of movement in striking the centres of a group of crosses on a board at definite intervals of time is a simple and possibly useful test.

De Sanctis has made many experiments on children with reaction-time instruments, and considers that the greater or less constancy of the degree of acuteness of tactile sensation in a series of tests is a measure of the greater or lesser capacity of concentrated attention. For this purpose Greisbach's æsthesiometer is used. Weakness of attention is one of the great faults of the feeble-minded, and it is possible that this test may give us valuable information.

The *cancellation* of an assigned symbol from a prepared form containing the assigned symbol in conjunction with a number of others of the same general order has often been used. It can be conducted on an elaborate and scientific scale or else in quite a simple way, such as crossing out all the groups of four dots in a row of varying groups of dots. I often employ this, paying more attention to the manner in which the subject goes to work than the actual speed or correctness of the result.

I wish I could now point out to you how the school records and certain tests decide the nature of the most suitable employment. There are, however, no data for this purpose. We have examined the Birmingham After-Care records time after time to see if we could decide the most appropriate occupations; we always found that the situations held included almost every variety of work as afforded by the multitudinous trades of the city; in many cases we have suspected that the work done was that of an errand boy or an attendant on a more skilled worker, and thought that the majority could be put into this class. Still, the fact remains that we have workers as a clerk, dressmakers, servants, soldiers, navvies, scavengers, carters, fitters, tube drawers, and workmen of all kinds. Some low-grade defectives are clever at managing animals, and one lad, hopeless at school and constantly playing truant to go to the cattle-market, now earns a fair wage as a cattle-driver; one or two others are doing well as grooms; farm work is, perhaps, the most suitable for many. Others who have shown marked aptitude in a particular direction, such as sewing, are doing well. One or two are almost musical geniuses.

In conclusion, I would say that I still attach the greatest importance to the opinion of an experienced physician; the complications I have indicated show how fallacious any rule-of-thumb method must be. I do not wish to discourage the use of tests; I hope they will be at once put in hand on a large scale and the results noted in ten years' time; a shorter interval is useless for our purpose. Till this has been done, and probably afterwards as well, a useful opinion can only be given by a medical man who has some knowledge of psychology and also some experience in social work. Before giving his verdict he will require a record of the child's school attainments, particularly in regard to manual work, and his rate of advance in the last two or three years as measured by the Binet scale, in addition to the social and medical record of the family.

Edgbaston.

THREE CASES OF COMPLETE RUPTURE OF THE UTERUS DURING LABOUR TREATED BY ABDOMINAL HYSTERECTOMY.

BY J. F. R. SEHEULT, M.D. EDIN.,
RESIDENT SURGEON, COLONIAL HOSPITAL, PORT OF SPAIN, TRINIDAD.

THE following three cases illustrate very well the various dangers to which patients with complete rupture of the uterus are exposed. In the first case there was hardly any shock and the risk of septic infection was slight, but hæmorrhage was very severe—both external and internal. In the second case shock and hæmorrhage were practically absent, while the danger of sepsis was very grave, and indeed infective peritonitis supervened two days after operation. In the third case shock was the predominant symptom. The first and third cases appear to support the observation that shock in these cases is more dependent on the degree and extent of the injury than on actual hæmorrhage. In the three cases the rupture was due to traumatism. In the first case there can be no doubt that the accident occurred during the delivery by podalic version. Bossi's dilator—a dangerous instrument—caused the lesion described in the

second case; while in the third case, although the condition of the patient on admission pointed to some severe injury, I am inclined to think that complete rupture took place during the performance of version; probably a spontaneous incomplete tear which was present on admission was converted into a complete one by this procedure.

CASE 1.—The patient, a well-nourished multipara aged 29 years, was admitted to the maternity ward of the Colonial Hospital, Port of Spain, on Feb. 28th, 1912, in the second stage of labour with a right shoulder presentation, and had been in labour for 24 hours under the care of a midwife. This woman had been married 11 years and had six children, the last being a year old. In her second, third, and fourth confinements the presentation was transverse, and the infants were still-born in each case.

On admission her general condition was good; her temperature was 99° F. and her pulse frequent. The child's right hand was protruding from the vulva; the os was fully dilated. Under chloroform internal podalic version was performed by the obstetric assistant, and the patient was delivered of a small living child. A very severe hæmorrhage followed the extraction of the child and placenta, and digital examination revealed a large complete tear in the lower uterine segment posteriorly and to the left; a gauze tampon was introduced while preparing the patient for abdominal section.

On opening the abdomen I found a very extensive longitudinal tear starting from the left side of the cervix and extending into the lower segment of the uterus, involving also the left broad ligament. The peritoneal cavity contained a large quantity of clotted and fluid blood. The uterus was extirpated with the adnexa of the left side and the peritoneal cavity was cleansed and washed out with warm normal saline solution, about three pints of this solution being left in before closing the abdominal cavity. After the operation there was some collapse, but the patient soon rallied and gave no cause for anxiety until the third post-operative day, when the temperature rose to 103° and the pulse became very frequent. On the following day the temperature fell to 98·4°, and except for a slight evening rise every day until the fifteenth day after operation it remained normal. The sutures were removed on the eleventh day, the abdominal wound healing by primary union. The patient was discharged, cured, 28 days after the operation.

CASE 2.—A multipara, aged 30 years, was admitted to the maternity ward on Jan. 8th, 1913, in the first stage of labour with a history of slight ante-partum hæmorrhage; she was about five and a half to six months pregnant; there was an offensive vaginal discharge and the fœtus was dead. Her temperature was 100° F. and her pulse 98 per minute. Labour progressed satisfactorily until the lower extremities and the body were born, when the pains ceased. Traction appears to have been made by the obstetric assistant to hasten delivery, with the result that the head was detached and left in utero. Several hours were then allowed to elapse before an effort was made to complete delivery; when this was attempted it was found that the cervix had contracted. Barnes's bags seem to have been introduced with no success; Bossi's dilator was then used with disastrous effect, as the cervix and lower uterine segment of the uterus were completely torn, allowing the escape of the macerated fœtal head into the abdominal cavity. Preparations were at once made to perform laparotomy. At this stage the patient's general condition was still good. There was little shock and hæmorrhage was not very severe.

On opening the abdomen I found a fairly large ragged rent extending from the cervix into the lower segment of the uterus anteriorly; the fœtal head, which was among the coils of small intestine, was removed and hysterectomy was performed; the peritoneal cavity was swabbed out and then thoroughly irrigated with warm sterile salt solution. The patient bore the operation well, but two days later signs and symptoms of acute peritonitis set in and she died on the fifth day after operation. Post-mortem examination was refused.

CASE 3.—A well-nourished woman, aged 34 years, was admitted to the maternity ward at 6 P.M. on June 21st, 1914, in the second stage of labour with a shoulder presentation and prolapse of the right hand. The patient had been in labour for 15 hours and the hand had been at the vulva for six hours. This was her seventh pregnancy; all her previous confinements had been normal and had terminated at term; in her third pregnancy she had had twins.

On admission her pulse was small, thready, and so rapid that it could not be counted; her temperature was 98° F. The abdomen was painful and very tender on pressure, especially over the right side of the lower portion of the abdomen. Internal podalic version was performed by the obstetric assistant, and during the expulsion of the placenta the patient's condition became more alarming; she appeared to be moribund. Examination revealed a large tear in the lower uterine segment to the right and posteriorly; hæmorrhage was not severe, but shock was profound. Preparations were at once made for laparotomy, and on opening the abdomen I found a large complete rent in the cervix and lower segment of the uterus posteriorly and to the right side involving the right broad ligament; the meso-appendix was lacerated; a small incomplete tear was also observed in the body of the uterus anteriorly and there was much extravasation of blood in the right broad ligament extending high up towards the mesentery.

Although the patient's condition seemed hopeless, I decided to perform hysterectomy as there seemed no other alternative in view of the extent and multiplicity of the lesion. The operation was quickly done, the peritoneal cavity was cleansed and irrigated with warm sterile normal salt solution, and the abdomen closed, three pints of the solution with 30 drops of adrenalin, 1 in 1000, being left in. After the operation the temperature was 96·8° and the radial pulse could not be felt. The patient remained more or less in this critical condition for 12 hours without any apparent reaction. On the morning of the 22nd she began to show signs of improvement, the temperature had risen to 98°, and the pulse, although uncountable, could be felt at the wrist; the abdomen was slightly distended and tender. In the evening the pulse, which had in the meantime improved, was 106 per minute and the temperature 99°. Improvement was maintained, the temperature ranging from 98·4° to 99·8°, and the pulse keeping below 106 per minute until the evening of June 26th, when there was a sudden rise of temperature to 101°, followed on the next day by a foul-smelling vaginal discharge which continued until July 2nd. From June 29th the temperature and pulse remained practically normal. The patient was discharged well on July 15th, 24 days after the operation.

While there is still some diversity of opinion with regard to the best method of treating cases of rupture of the uterus generally, it is now universally conceded that abdominal section, although tending to increase the shock which usually already exists, is the correct surgical procedure when the rupture is complete and extensive. The question of extirpating the uterus or merely repairing the rents in the organ depends largely on attendant circumstances. In the cases under review the indication for hysterectomy was very strong and that operation appeared to offer the only chance of recovery. Once the abdomen is opened hysterectomy does not seem to involve a greater degree of shock than does the suturing of lacerations in the uterine wall, and the time occupied by the former operation should not exceed very much that involved by the latter procedure.

Port of Spain, Trinidad.

FATAL ACCIDENT TO A BRIGHTON MEDICAL MAN.—Mr. Henry Algernon Hodson, M.R.C.S. Eng., L.R.C.P. Edin., of Brunswick-square, Brighton, died on July 9th from injuries received while walking home at night. In accordance with the order prohibiting lighting the town was in darkness, and Mr. Hodson walked through an open area gate and fell down the flight of steps. The deceased practitioner, who was 63 years of age, was surgeon to the Hove Hospital and Dispensary and also surgeon to the Brighton and Hove Medical and Surgical Homes. He was medical officer to the 1st Battalion of the Sussex Volunteer Training Corps, and was engaged at the time of his death in training the ambulance section.

SIGMOID TORTUOSITY OF THE INTERNAL CAROTID ARTERY AND ITS RELATION TO TONSIL AND PHARYNX.

BY A. G. TIMBRELL FISHER, M.B., CH.B. BRISTOL, M.R.C.S., L.R.C.P. LOND.,
LATE DEMONSTRATOR OF ANATOMY, UNIVERSITY OF BRISTOL.

VERY conflicting statements are made with regard to the relation of the internal carotid artery to the tonsil. If we examine the various text-books of anatomy or surgery we find that there are two diametrically opposite views held and often asserted with considerable dogmatic vigour. The two following quotations from leading text-books will serve to illustrate the two views:—

(1) "The internal carotid artery is close to the pharynx, but some way behind the gland. The vessel is, indeed, about ¾ of an inch posterior to that body, and is in comparatively little danger of being wounded when the tonsil is excised."[1]

(2) "The incision should be made from below upwards, and the edge of the knife rather in than out, so as to avoid all risk of wounding the internal carotid which is in close contiguity to the outer surface of the gland."[2]

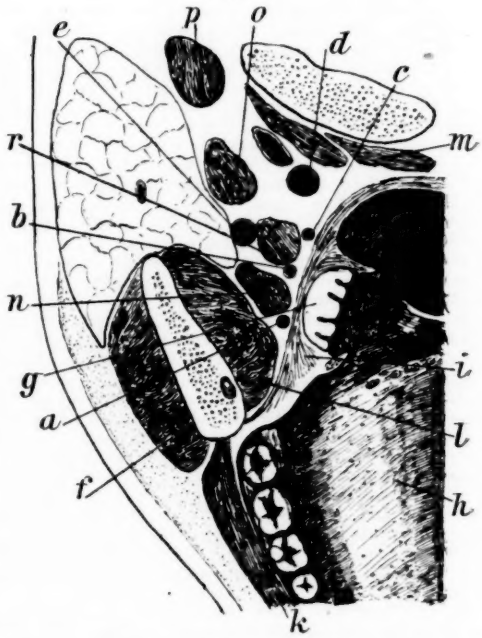
English text-books ring the changes on these two views with monotonous regularity, but one text-book of anatomy actually has both of these contradictory statements on the same page.[3] By far the most satisfactory accounts of the relation of the internal carotid artery to the tonsil are given in French text-books. The following clear description from Testut[4] explains the two views cited above and brings them more into harmony: "La carotide interne, généralement rectiligne, peut être plus ou moins flexueuse et décrire ainsi des courbes très variables par leur nombre, leur direction, leur étendue: l'une de ces courbes vient parfois se mettre en rapport avec la face externe de l'amygdale dont l'ablation peut, dans ce cas, être fort dangereuse." MacAlister,[5] almost alone of anatomists in this country, gives a similar description: "When the internal carotid artery is tortuous it lies close to its hinder and outer surface separated therefrom by the superior constrictor of pharynx." Quain[6] merely states that "the cervical part of the artery may be tortuous."

I have been led to review the subject of tortuosity of the internal carotid artery by two cases of very marked tortuosity to which my attention was drawn on consecutive days, from which fact I would conclude that the condition is much commoner than is generally supposed. Before describing these it may be mentioned that it is now established as a firm basis that the situation the internal carotid artery most commonly occupies with regard to the tonsil is that described in quotation (1), *vide ante*, and exemplified in Fig. 1.

Normal Anatomy.

It will be seen from Fig. 1 (after Cunningham) that close to the outer surface of the tonsil, but separated from it by the superior constrictor of the pharynx, we have from before backwards (*a*) the tonsillar branch of the facial artery which ascends to the tonsil between the internal pterygoid and stylo-glossus muscles; (*b*) the ascending palatine branch of the facial artery, which passes between the stylo-glossus and stylo-pharyngeus muscles; and (*c*) the ascending pharyngeal artery from the external carotid artery. The facial artery also lies close to the lower part of the outer surface of the tonsil. This fact is not represented in the diagram. The internal carotid artery lies considerably posterior and to the outer side of the tonsil, and should certainly be out of harm's way if reasonable care is taken in operations on the tonsil. And it

FIG. 1.



Transverse section, showing normal anatomy of the tonsillar region. *a*, Tonsillar artery; *b*, ascending palatine artery; *c*, ascending pharyngeal artery; *d*, internal carotid artery; *e*, external carotid artery; *f*, masseter muscle; *g*, tonsil; *h*, tongue; *i*, superior constrictor muscle; *k*, buccinator muscle; *l*, internal pterygoid muscle; *m*, prevertebral muscles; *n*, stylo-glossus muscle; *o*, stylo-hyoid muscle; *p*, digastric muscle; *r*, stylo-pharyngeus.

would seem more probable that one of the three arteries—*a*, *b*, or *c*—is more liable to injury than the internal carotid artery itself. In this connexion an interesting case described by Mr. Morrant Baker[7] may be quoted in which hæmorrhage from the ascending pharyngeal artery proved fatal.

Mr. Morrant Baker's case.—A man, aged 23, fell when intoxicated and injured his tonsil with the end of a tobacco-pipe which he was at the time smoking. He came to the hospital two days later with what looked like an abscess of the tonsil. This was incised and a small quantity of blood was evacuated. Repeated hæmorrhages then occurred and on the fourth day a piece of pipe-stem, one inch in length, was removed through the wound in the tonsil. The common carotid artery was afterwards tied, but the patient never recovered from the loss of blood he had sustained. At the post-mortem examination it was found that the pipe-stem had opened into the ascending pharyngeal artery; the hæmorrhage from which had caused his death.

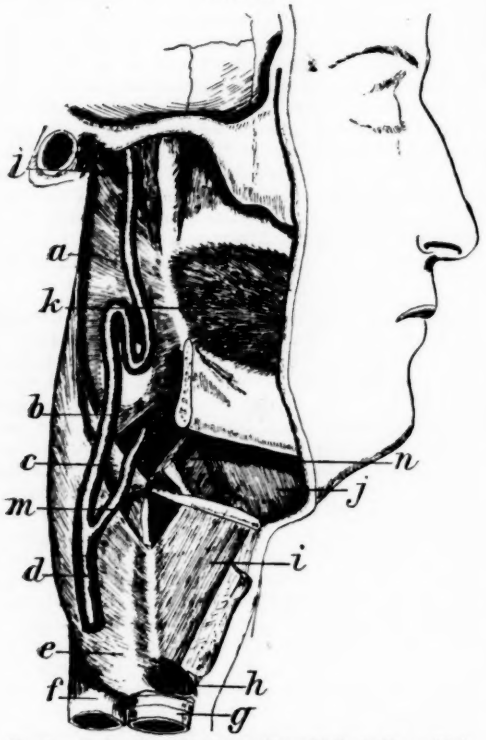
The abnormal internal carotid artery. The tortuosity lies in the sagittal plane.—

CASE 1.—This occurred in an elderly female in the dissecting-room. (See Fig. 2.) The condition was bilateral; one description will thus suffice for the two sides. The common carotid divided at its usual level. The internal carotid pursued a normal course until it reached the level of the

[1] Surgical Applied Anatomy, Sir Frederick Treves.
[2] Manual of Surgery, Rose and Carless, ninth edition.
[3] Gray's Anatomy, seventeenth edition.
[4] Traité d'Anatomie Humaine, tome deuxième, deuxième édition.
[5] Text-book of Anatomy, MacAlister.
[6] Quain's Anatomy, tenth edition.
[7] St. Bartholomew's Hospital Reports, 1876.

greater cornu of the hyoid bone; it then described a curve with its convexity directed forwards. This curve lay between the internal pterygoid muscle and the back part of the outer surface of the tonsil, the superior constrictor muscle intervening. This curve ended 3 cm. above the angle of the mandible. The artery then bent sharply on itself and ran downwards and forwards for 1·5 cm., then bending sharply a second time it ran upwards and backwards to reach the

FIG. 2.



Case 1. Tortuosity of the internal carotid lies in the sagittal plane. The unshaded area on the superior constrictor muscle covers the area on the inner surface occupied by the tonsil. *a*, Superior constrictor of pharynx; *b*, internal carotid artery; *c*, middle constrictor; *d*, common carotid artery; *e*, inferior constrictor; *f*, œsophagus; *g*, trachea; *h*, crico-thyroid muscle; *i*, thyro-hyoid muscle; *j*, mylo-hyoid muscle; *k*, buccinator muscle; *l*, tensor palati muscle; *m*, external carotid artery; *n*, hyoglossus muscle.

level of the first bend, and then ran almost directly upwards to the base of the skull. The second bend came into relationship with the upper part of the tonsil, the superior constrictor intervening. No other arteries were tortuous in this case.

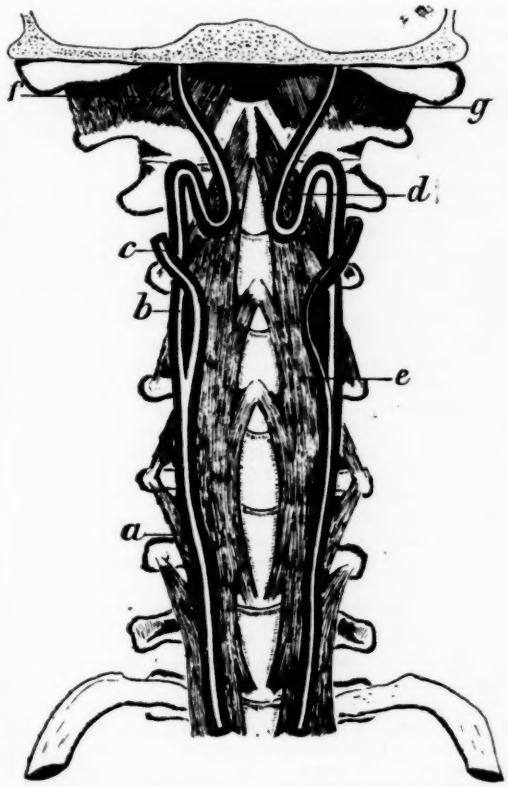
CASE 2.—This was also from a dissecting-room subject—a middle-aged male. The common carotid artery divided at its usual level. The internal carotid at first described a curve somewhat similar to that in Case 1, except that it reached only to the post pillar of the fauces. Having reached a point 2·2 cm. from the base of the skull, the artery bent sharply downwards and forwards for 1·2 cm., thus lying in front of the main trunk. Next it bent again sharply and ran upwards to the inner side of the descending limb, thus lying in a different plane. The second bend fell short by about 1 cm. of the top of the tonsil. Here, again, the condition was exactly similar on the two sides, and it should be mentioned that other arteries, such as the external carotid, were tortuous; indeed, the last-named artery lay very close to the lower part of the outer surface of the tonsil.

It will be seen from these two cases that the artery described an S-shaped curve, and that in Case 1 it was very intimately related to the tonsil, and in Case 2 more closely related than is usual. Also in Case 1 the sigmoid curve lay in the sagittal plane and in Case 2 partly in the sagittal and partly in the coronal plane.

The tortuosity lies in the coronal plane. (Fig. 3.)—Dr. A. B. Kelly in an interesting paper[8] has shown that the presence of large pulsating vessels in the posterior wall of the pharynx which he had observed clinically was due to an abnormal tortuosity of the internal carotid artery. He drew attention to four cases that had come under his personal observation. One of these may well be quoted:—

CASE 3 (Mr. Kelly).—The patient, a man aged 75, complained of indistinct speech. This was found to be due to the contraction of syphilitic cicatrices of the soft palate. In the course of the examination a large pulsating vessel was seen projecting from the angle between the posterior and right lateral walls of the pharynx. It emerged from the posterior wall about the level of the upper border of the epiglottis and ascended vertically, becoming gradually more prominent. When opposite the upper part of the tonsil, where its convexity was most marked and its pulsations best seen, it curved outwards and disappeared in the tissues at the side of the naso-pharynx. It was fully as thick as a pencil and extended laterally over a considerable part of the posterior wall of the pharynx. The mucous

FIG. 3.



Tortuosity of internal carotid lies in the coronal plane. *a*, Common carotid artery; *b*, internal carotid artery; *c*, external carotid artery; *d*, lower bend of sigmoid tortuosity; *e*, longus colli muscle; *f*, rectus capitis anticus major muscle; *g*, rectus capitis lateralis muscle.

membrane covering it was normal. Pressure over the large vessels on the right side of the neck, above the level of the upper border of the thyroid cartilage, checked the pulsation in the pharynx. Nothing abnormal was detected in the condition of the walls of the vessel or in those of the temporal or radial arteries. There were no symptoms that could be attributed to its presence. The appearances have remained unchanged during the nine months that have elapsed since his first visit.

[8] Glasgow Medical Journal, vol. xlix.

The three other cases mentioned by Dr. Kelly appeared in a woman aged 75, a man aged 72, and a young woman aged 22. His essay is accompanied by a diagram of abnormal tortuosity of the internal carotid artery from a case in the museum of the University of Glasgow. He considers that the pulsating prominence on the posterior wall of the pharynx corresponds to the lower bend of a sigmoid tortuosity of the internal carotid artery. (Fig. 3, *d*.) This tortuosity is situated in the coronal plane. Similar cases of pulsating vessels in the pharynx have been frequently recorded from time to time by various observers, and in nearly every case it has been considered to have been the ascending pharyngeal artery, no doubt because the minds of all were obsessed by the text-book descriptions of the internal carotid artery and were unaware of the comparative frequency with which tortuosity occurs. But anyone who will study Dr. Kelly's article again and will compare the two diagrams he gives of the clinical appearance of the pharynx and of the anatomical preparation can hardly fail to be convinced. It is interesting to notice that tortuosity of the internal carotid artery according to the various observers quoted by Kelly has most frequently been observed in elderly women. Pulsation of the lateral walls of the pharynx has been more commonly observed in young women. Farlow [9] describes several cases of this condition. Possibly the anatomical explanation of this lies in a sigmoid tortuosity in the sagittal plane, similar to Case 1, *vide ante*.

Tortuosity in the transverse plane.—I have not personally observed a case of this nature, but Stimson [10] records a case where the artery describes "an S-shaped fold or turn about an inch above the bifurcation, which drew the artery into a loop three-quarters of an inch across placed transversely in the neck so that the upper portion of the loop was three-quarters of an inch superficial to the line of the artery itself." One can imagine that such a case must have simulated aneurysm. This form of tortuosity can naturally only occur in the lower part of its course, as above, the artery cannot project externally owing to the resistant structures by which it is separated from the surface. For this reason aneurysm of the internal carotid in its upper part projects into the pharynx following the line of least resistance. We have also in this fact the explanation of the sigmoid curve being most commonly situated in the sagittal or coronal planes.

Etiology.

From the evidence of the dissecting-room it would seem that the condition occurs in old people. This argument is obviously fallacious owing to the fact that young subjects seldom find their way to the dissecting-room. Of Dr. Kelly's four cases, three were over 70 years of age; one, however, was a young person. Professor Walker Hall kindly examined microscopically sections from Cases 1 and 2, and reported that the evidence of atheroma was very slight indeed and quite insufficient to account for the tortuosity. The question arises, therefore, as to whether the condition is or is not congenital. Reference to comparative anatomy invests the subject with great interest. In many of the mammalia the internal carotid artery is even more tortuous than it is in man—for instance, that of the seal is actually forty times as long as the distance it has to traverse.[11] Then in some animals, such as the sheep, the internal carotid artery is absent, its place in the cranium being taken by the rete mirabile. The object of the rete mirabile seems to be to prevent congestion of the head in grazing animals and of the tortuosity to diminish the force of the blood stream. Next, it is a well-known fact that we meet with other abnormalities of the internal carotid artery which testify to man's mammalian kinship. For instance, Quain in his classical commentary on the arteries describes a case of absence of the left internal carotid artery. Through the kindness of Professor G. D. Thane I have been enabled to examine the original specimen, and in many ways it is a striking reversion to the condition in ruminants. I have also described elsewhere [12] a case of complete absence of both internal carotid arteries. The inference that comparative anatomy seems to teach on this subject is that it would be surprising if we did not meet with great tortuosity of the internal carotid artery as a congenital abnormality in man.

Practical Applications.

When the sigmoid tortuosity lies in the coronal plane it is liable to injury in operations involving the posterior wall of the pharynx. Before such an operation as the removal of adenoid vegetations from the naso-pharynx abnormal pulsation should be felt for, as fatal hæmorrhage has occurred from injury to the internal carotid artery during this operation. That the abnormal pulsation is due to a sigmoid tortuosity of the internal carotid artery and not to the ascending pharyngeal artery seems to be now definitely proved. When the sigmoid tortuosity lies in the sagittal plane, it is more likely to be met with in operations on the tonsil. Although it is usually stated that cases of fatal hæmorrhage after removal of the tonsil or incising a peritonsillar abscess are not due to injury of the internal carotid artery it seems not unlikely that some of the cases are due to this cause. In the latter case no measure short of ligature of the common carotid artery is likely to be of any avail, though even this measure may fail owing to the free anastomosis between the carotids in the circle of Willis. Again, in injuries or bullet wounds involving the throat which have led to severe primary or secondary hæmorrhage we must remember not to be obsessed by the rigid text-book description of the internal carotid artery.

In conclusion, I must express my thanks to Professor Edward Fawcett for permission to publish descriptions of Cases 1 and 2, and to Professor Walker Hall for the privilege of his expert advice on the morbid histology of the arterial wall in the same cases.

Bristol.

[9] Boston Medical and Surgical Journal, March 31st, 1887, and July 3rd, 1890.
[10] Proceedings of the New York Surgical Society (Medical News).
[11] Chauveau: Comparative Anatomy.
[12] Journal of Anatomy and Physiology, vol. xlviii.

QUEEN'S UNIVERSITY OF BELFAST.—At the graduation ceremony of the Queen's University of Belfast, held on July 8th, Major Robert McCarrison, I.M.S., M.D., F.R.C.P. Lond., was given the degree of D.Sc. for his original work on "The Etiology of Endemic Goitre." Major McCarrison was an old student of Queen's College, Belfast. For the degree of M.D. by thesis, Dr. Harold Black was highly commended, and Dr. John Gibson was awarded the gold medal for a thesis on "Heart Block." For the degree of M.B., Mr. E. G. B. Calvert obtained first-class honours and was awarded a scholarship of £20 for being first of all the candidates, and a scholarship of £30 for being first in medicine. Mr. R. L. Rea obtained the prize of £30 for being first in surgery, and Miss E. S. Walker was awarded £30 for being first in obstetric medicine. The Magrath clinical scholarship was divided equally between Mr. Rea and Mr. Calvert.

Reviews and Notices of Books.

On Means for the Prolongation of Life.

By Sir HERMANN WEBER, M.D. Bonn, F.R.C.P. Lond. Fourth edition, enlarged. 1914. London: John Bale, Sons, and Danielsson. Pp. 235. Price 4*s.* 6*d.*

THE third edition of Sir Hermann Weber's interesting book was reviewed at some length in THE LANCET of Feb. 9th, 1907. The appearance of a fourth enlarged edition is of special interest, since in the preface we are told that the author is now in his ninety-first year. The general principles inculcated are well summarised in the sentence given on the title-page: "Work, moderation, and contentedness are the main sources of health, happiness, and long life." Sir Hermann Weber lays stress upon measures designed to combat unfavourable hereditary tendencies, an aspect of preventive medicine which is deserving of more attention than it often receives from practitioners.

The importance of regular exercise and of strict moderation in regard to the intake of food is discussed at length, and valuable suggestions are made in connexion with these matters. Sir Hermann Weber quotes many interesting cases from his own wide experience to illustrate many of the recommendations he makes. The book is, as we have indicated before, instructive and readable. A valuable list of references is appended, and we can commend the book to the advanced in life and especially to those who have care of them.

Nervous and Mental Diseases.

By ARCHIBALD CHURCH, M.D., Professor of Nervous and Mental Diseases in the Northwestern University Medical School, Chicago; and FREDERICK PETERSON, M.D., formerly Professor of Psychiatry, Columbia University. Eighth edition, thoroughly revised. With 350 illustrations. London and Philadelphia: W. B. Saunders Company. 1915. Pp. 940. Price 21*s.* net.

THE eighth edition of this text-book contains some eight more pages than the previous edition. The authors have, in addition, made a large number of interpolations and minor alterations to bring the book into line with the most recent advances in neurology and psychiatry. The chief changes, perhaps, are to be found in the sections on poliomyelitis and on syphilis of the nervous system.

In our review of the previous edition a number of criticisms were offered on points which we thought might with advantage be revised on a subsequent occasion, and we are glad to find that some of the modifications suggested have been adopted. The book is conceived on modern lines and will supply the student with a good foundation in the allied subjects of which it treats.

X Rays, How to Produce and Interpret Them.

By HAROLD MOWAT, M.D. Edin., Radiographer to the Metropolitan and Royal Chest Hospitals. London: Henry Frowde. 1915. Pp. 204. Price 8*s.* 6*d.* net.

THIS book is written for those who have little or no knowledge of the subject of X rays. Certainly the author has not overburdened the reader with needless or lengthy descriptions; we consider that an effort has been made to compress too many items into the compass of the book. We think the average beginner will hardly be satisfied with the brevity of the references to many matters upon which he desires to extend his knowledge. This applies more particularly to the technical part of the subject, always the greatest trial to the beginner, who, as a rule, has not troubled himself about electricity beyond what is necessary to pass an examination in more or less elementary physics.

In the more medical part of the volume we find the section on the diagnosis of thoracic conditions has been treated fairly well, but even here we think some of the references err on the side of brevity. Much very sound information is given in the chapters on the diagnosis of digestive and genito-urinary diseases, and the final chapter on diseases and injuries of the bones and joints is of considerable value. The subject of X ray therapeutics is not touched upon.

The book should meet with an appreciative audience at the present time when radiology is being taken up by many practitioners who were ignorant of the subject until the advent of the present war.

LIBRARY TABLE.

Cancer: Its Cause and Treatment. By L. DUNCAN BULKLEY, A.M., M.D., Senior Physician, New York Skin and Cancer Hospital, &c. New York: Paul B. Hoeber. 1915. Pp. 230. Price $1.50.—Dr. Bulkley in his preface refers to the great preponderance in the literature of cancer of works dealing with it wholly from its histological and surgical aspects, and starts out with the intention of regarding cancer from a broader aspect, endeavouring to understand some of the underlying causes of malignant disease and to ascertain whether some general principle cannot be established to regulate the prevention and after-treatment of the disease. This book is based on lectures delivered by him at the New York Skin and Cancer Hospital. He is strongly of opinion that after the removal of the results of disease by surgical operation much more may be done than is usually done to prevent that recurrence which is so justly the dread of the operator. He discusses the various theories that have been propounded as to the nature of cancer, and concludes that for the development of the local manifestation of cancer three elements are requisite—viz.: (1) a predisposition, or suitable blood condition; (2) a local stimulation or irritation of the part affected, acting upon (3) the site of an embryonic rest. He discusses the frequency and geographical distribution of cancer, its metabolism, its relation to diet, and its medical treatment, concluding with some clinical considerations and ending with 31 conclusions, the practical outcome of which is that the expectation of permanent success must depend upon early attack by dietetic, hygienic, and medicinal measures of the morbid process leading to tumour formation.

A Manual for Midwives. By C. NEPEAN LONGRIDGE, M.D. Vict., M.R.C.P. Lond., F.R.C.S. Eng., and J. BRIGHT BANISTER, M.A., M.D., B.C. Camb., M.R.C.P. Lond., F.R.C.S. Edin. Second edition. With 51 illustrations. London: J. and A. Churchill. 1915. Pp. 339. Price 3*s.* 6*d.* net.—This small volume is written with the idea of giving a pupil midwife the information necessary for her. It does not pretend to be a detailed manual of midwifery and wastes very little space on theoretical considerations. Both the authors have been connected with Queen Charlotte's Hospital, and as the result of their experience in teaching elementary midwifery they have produced a compact and very practical book which should be highly popular with those commencing the subject. Heavy type is used to bring into prominence points

that are frequently forgotten by the student and facts arranged in tabular form and tables of summaries are frequently found. The illustrations are numerous and mostly good. Their value is considerably increased by the short explanation of what they are intended to show, which is printed underneath many of them. The volume contains the rules of the Central Midwives Board and an article by Mr. Sydney Stephenson on the care of the infant's eyes.

The Medical Annual, 1915. Bristol: John Wright and Sons, Limited. Pp. 824. Price 10s.—This well-known publication has now reached its thirty-third year, and in spite of the difficulties under which many of the contributors have been placed the high standard which has characterised the work for many years past has been fully maintained. Apart from the special articles on naval and military surgery, and references to personal experience in the treatment of wounds in the surgical articles, there is little to suggest the circumstances under which the articles have been written. The contribution on Naval Surgery is by Deputy Surgeon-General A. Gascoigne Wildey, R.N., and deals not only with wounds received in action, but also with injuries due to accident. The article on Military Surgery is written by Colonel Louis A. La Garde, of the United States Army (retired), and is mainly based on the experience of the Spanish-American War. Some interesting remarks are made by Dr. O. C. Gruner on the pathology of the blood, especially in regard to neutrophile leucocytes, of which some excellent coloured plates are given. In the summary of the work which has been accomplished on radio-activity and electro-therapeutics, Mr. C. T. Holland has exhibited wise discretion in the choice he has made. The observations on the use of radium are worthy of notice. He quotes the remarks of Sir Alfred Pearce Gould, who believes that there is no doubt that radium has influence over the life-history of animal cells, and that its "selective power" enables it to be used to remove the cells of a malignant growth and to leave behind the healthy tissues; that the true therapeutic use of radium rests upon its selective affinity for cancer cells, and not upon a general caustic or destructive power. The experience of other surgeons is also quoted, such as that of Bumm, who in writing of cancer of the uterus stated that there was nothing in the whole realm of the medical armamentarium that approached radium in its power to produce shrinking of the primary growths, together with inhibition of discharge and hæmorrhage. The *Medical Annual* is a valuable yearly addition to the library of the medical practitioner, for it contains in one volume a useful and practical summary of the progress of medicine during the past year.

JOURNALS AND MAGAZINES.

The Archives of Internal Medicine. Vol. XV. No. 5, Part 2, May 15th, 1915. Chicago: American Medical Association. Price, single copies, 50 cents; annual subscription 18s.—This number is devoted to the subject of clinical calorimetry and is of considerable interest. It contains the following papers: 1. A Respiration Calorimeter for the Study of Disease, by Graham Lusk. A brief description is given of an Atwater-Rosa-Benedict respiration calorimeter which has been installed in the Bellevue Hospital, together with a history of the introduction of the instrument and the general method of using it. 2. The Respiration Calorimeter of the Russell Sage Institute of Pathology in Bellevue Hospital, by J. A. Riche and G. F. Soderstrom. A detailed account is given of the construction of the apparatus and of the methods used to test its accuracy. 3. The Organisation of a Small Metabolism Ward, by Frank C. Gephart and Eugene F. Du Bois. The methods adopted to ensure accuracy in regard to the supply of food and collection of the excreta are described, and the manner in which the strict diets are rendered agreeable to the patients is of special interest. It shows with what care the whole scheme of work has been organised. 4. The Determination of the Basal Metabolism of Normal Men and the Effect of Food, by Frank C. Gephart and Eugene F. Du Bois. Seven normal men were studied with and without food as controls for the observations on patients in the metabolism ward. Their average basal metabolism was first determined—i.e., the metabolism at perfect rest—14 to 18 hours after the last meal. This proved to be 34·8 calories per hour per square metre of body surface. The average basal metabolism of 89 normal men studied by Benedict, Emmes, Roth, and Smith was 34·7 calories, and this figure has been accepted as the normal by Mr. Gephart and Dr. Du Bois. They find that among groups of men of various weights metabolism is proportional to surface area according to Rubner's law, and is not proportional to body weight. 5. The Measurement of the Surface Area of Man, by Delafield Du Bois and Eugene F. Du Bois. An ingenious method is described for determining surface area and various formulæ proposed for the purpose are examined and discussed. 6. Notes on the Absorption of Fat and Protein in Typhoid Fever, by Warren Coleman and Frank C. Gephart. 7. Calorimetric Observations on the Metabolism of Typhoid Patients, with and without Food, by Warren Coleman and Eugene F. Du Bois. Among other conclusions they find that in typhoid fever, protein, fat, and carbohydrate are oxidised to the same, or approximately the same, end-products as in health, and in their oxidation gives off the standard amounts of heat. The basal heat production rises and falls in a curve roughly parallel with the temperature. Typhoid patients can store body fat on an abundant diet while losing body weight and body protein. There is a toxic destruction of protein in typhoid fever. 8. On the Diabetic Respiratory Quotient, by Graham Lusk. This is a brief note preparatory to further work on metabolism in diabetes.

Vida y Ciencia.—We have before us the first number (dated May, 1915) of a new Spanish monthly magazine, edited by Dr. José Maria Puelles, who, with Dr. Espejo, represented Seville at the last International Medical Congress in London. The magazine is intended for popular reading, and combines a judicious mixture of scientific with ordinary subjects, as will be gathered from the following table of contents: Interview with Dr. Max Nordau, by Dr. Puelles; The Romance of the Alcazar, by Mrs. Bernhard Whishaw; The Forces of Life, by Dr. Juan Fernandez-Ballesteros; Potassium Salts in Spain, by Mariano Simó; The Hygiene of Puberty, by Dr. Lahifor, Dr. Antonio Salvat, and by the Bachiller José de Cadiz; Tuberculosis is Curable, by Dr. Jesús Centeno y Jimenez; and much other interesting material. Dr. Puelles appears to be a man of indomitable perseverance and will, to judge from the photographs of his hands, which have been sent to us by a correspondent, for he was one of the early martyrs to the unsuspected dangers of the X ray.

AN INFIRMARY SURGEON'S SALARY.—A curious position has arisen as regards the payment of the salary of Mr. N. Mayne, surgeon to the Longford County Infirmary. The salary is payable by the county council on a certificate signed by five governors of the infirmary. The relations between the governors and their surgeon in the early part of this year were unpleasant, and at a meeting of the governors only four were willing to sign the certificate. A fifth signed it later. The county council refused to pay, holding that the certificate must be signed at a meeting of the governors. Mr. Mayne sued the council before the county court judge and obtained a decree for £47. The council appealed, and the appeal was heard last week by the judge of assize, Mr. Justice Gibson. It was argued on behalf of the appellants that the signature to the certificate must be an act of the governors as a corporate body, and done at a meeting. The judge held accordingly, and reversed the decision of the lower court, without prejudice to Mr. Mayne's right to apply for a mandamus, which he held to be the only remedy open.

THE LANCET.

LONDON: SATURDAY, JULY 17, 1915.

The Size of Military Hospitals.

CRITICISM is of value in proportion to the amount of knowledge of the subject possessed by the critic. This truism has special importance at a time when all public matters are considered open to criticism. No detail of military organisation seems to escape the vigilant eye of those intent on suggesting improvements. On broad principles it ought to be assumed that those charged with organisation have good reasons for the line of action they adopt; and while it may be interesting for every action to be openly displayed before the world, and for those in authority to consider all suggestions which are made, it is probable that a large number of these suggestions may at once be brushed aside as impracticable. Too often the critics appear to be influenced by the desire to cavil at systems which have been the result of prolonged thought. These reflections inevitably arise in connexion with the leading article which appeared in the *Times* of July 9th, dealing with the Voluntary Aid Hospitals. Starting with quotations from Sir FREDERICK TREVES on the desire of the sick man to get out of the hospital, to be "free of the ward, with its sickly sights, its suspicious smells, and its horrid sounds," the writer proceeded to argue that for this reason small hospitals are preferable to large hospitals. It may be remarked in passing that the whole article appears to be written in entire forgetfulness of all that has appeared in the same paper and elsewhere in favour of the establishment and equipment of the King George Hospital. The difference of argument and sentiment appears to result from the fact that the large hospital must be treated as an accomplished fact, while the question now arises whether the greater accommodation required is to be obtained by the addition of huts, or by utilising as hospitals the smaller collections of beds which have been offered to the War Office. The argument in favour of the latter course can be, and is, well sustained if we forget the primary difference between hospitals and convalescent homes, but in our opinion the whole point in favour of the small hospital lies in lack of appreciation of the difference between the hospital and the convalescent home.

Soon after the commencement of the war numerous offers of assistance were made by many whose sympathies were touched, whose patriotic feelings were aroused, and whose desire to do something at once and something practical naturally turned to the succour of our gallant army. Small hospitals were equipped hastily in many directions, and the mere possession of beds, equipment, and nursing staff was considered sufficient to base a claim upon consideration. We know well that these small hospitals were prepared to do a good work for the nation at a small cost, and much can be said for the assumption that these hospitals might form a splendid training ground for nurses, since Voluntary Aid Detachment nurses are at present being employed in the larger military hospitals. There is room for both the large military hospitals and the smaller institutions, provided that the possible scope of the work of each is kept distinct. There can be no question that the small hospital cannot usefully cope with the same class of work as the military hospitals, and until this elementary fact is recognised those who have undertaken the management of these smaller centres will be disappointed, and this is a serious matter because the amount of industry, self-sacrifice, and surgical and medical work that has been expended in the conduct of many of them has been very great. But their difficulties began almost with the first arrival of wounded back in England. Quite early in the war there were numerous complaints because, in spite of the readiness of these small hospitals to receive wounded soldiers, none were sent to them, and even in later days many of the surviving institutions still complain that they do not receive cases of severity with which they deem themselves prepared to deal. The difficulty in employing the services of the smaller hospitals was not realised, and the sense of disappointment seems to have arisen from lack of understanding of the methods by which wounded soldiers ultimately reach this country. These methods conform to one system, and the whole system is based on the careful weeding out of severe cases. Complaints are sometimes heard that all the necessary operations have been performed before the soldiers reach the hospitals in this country, and it is perfectly true that many who arrive in this country have already had their more pressing needs attended to before being sent back from abroad. And well it is, in most cases, that this should have occurred. The natural consequence is that military hospitals in this country, whether large or small, become filled with patients who have been fitted to travel. Many of these may yet require further operations, but a certain proportion stand in need mainly of convalescent treatment, and will speedily be able to leave the large hospital with its sickly sights, its suspicious smells, and its horrid sounds. They require mainly to be put into good surroundings, and are not in need of any elaborate surgical or medical treatment. There are, therefore, arguments for the establishment of smaller institutions, linked to the larger hospitals, but it must be remembered that there is a certain amount of administrative control in connexion with military

patients, and it is exactly this administrative control which it is so difficult to ensure in small institutions. Let it be granted that as a rule the men are splendid, yet it is inevitable that in dealing with large numbers occasional difficulties may arise, difficulties which may result from an endeavour to maintain military discipline in the absence of proper authority and powers to enforce discipline. Another problem that arises in connexion with some of the smaller hospitals results from the urgent need of men at the front and the difficulty of securing the early return of those who are sufficiently restored to undertake service. The more widely these small hospitals are scattered the more troublesome must be the supervision which they should receive.

The *Times* has advocated three reforms: (1) That the doctors in charge of the smaller hospitals should be given honorary military rank with uniform; (2) that the uniforms of the nurses should be registered; (3) that the grant from the War Office should not be stopped when the hospitals are empty. Whatever may be the case with regard to the first two recommendations, it is somewhat difficult to realise how the third is to be effected, since the War Office grant consists of a payment per day per man and is not a grant dependent on the number of beds offered. We know that these hospitals have to be maintained at full strength, even though the beds may be unoccupied; but this argument applies equally to every nursing home throughout the kingdom, and is, indeed, the sole justification for the high rate of payment demanded in such institutions from each individual patient. We believe that there is room for both the larger and smaller hospitals, but it is certain that the latter should always be affiliated to, or linked with, the large military hospitals for the purposes of administrative control. There should be no attempt at rivalry, since each in its proper sphere can perform admirable work in the service of the nation.

Women and War.

FROM the beginning of the war the women of the medical profession volunteered for service in every direction, and they have done great work both at home and abroad. In France and in Serbia women have supplemented notably the work of men in the hospitals or have accepted lone responsibilities in a manner which has received on all sides the praise which it has justly merited; and it is certain that in this way a strong impulse has been started among women to join the medical profession. It is seen to be a career in which satisfaction may be obtained for the natural desire for distinction, while professional ability will command an income and scientific work will receive recognition. The Royal Free Hospital, which was the first general hospital in London to open its door to women students, and which accordingly became the clinical centre of the London School of Medicine for Women, has trained a very large number of medical women who have volunteered for service in connexion with the war. The hospital itself placed two wards at the disposal of the military authorities and converted the large new out-patient department into a military hospital for some 200 patients. Many former students of the hospital assisted in forming both in Belgium and in France various military hospitals, and some of these were staffed by medical women only. The work done by these hospitals has been recognised as of the greatest value, and now Dr. LOUISA GARRETT ANDERSON has been placed in command of a military hospital in Endell-street, London. Several hospitals in Serbia also have been under the care of surgeons, students, and nurses from the Royal Free Hospital. But it is not the medical women or the nurses from this hospital only who have done useful war service, for from every school where women are trained for the medical profession, and from every hospital in the country where their services are employed, offers have come of help in some way or another, and women practitioners from all parts of the kingdom have given their assistance whenever and wherever they were required.

In the nursing profession the same desire to help in the national crisis has been shown. Women here have done their work in the most trying and dangerous circumstances with courage, and have borne on many occasions intense suffering with fortitude. Those nurses, also, who have remained at home have made many sacrifices, and have worked at great pressure owing to the depletion of their numbers by the urgent calls for help at home and abroad. To fill the gaps thus produced in the ranks of nursing, women of various social grades have volunteered, and here a word of praise must be given to our voluntary hospital authorities who have trained at short notice all suitable applicants under a modified course of instruction designed to make previously untrained women of value in many emergencies. The mischief of a shortage of nurses has thus been partly avoided, though it would have been felt far more severely had not the country been able to draw on the assistance of the Voluntary Aid Detachments, the character of whose work has been good. It has, indeed, been so good that we might think, having the utility of these volunteers in our mind, that modern professional nursing calls for an unnecessary amount of training, until we realise the enormous difference between being useful under direction and being competent in all circumstances. The idea that the half-trained can replace the fully trained, which has sprung up in some economical minds owing to the success of the nurses of the Voluntary Aid Detachments, had better be forgotten forthwith. Many of our estimates of value made during the time of war will have to be revised when normal conditions prevail and the extreme hardship and difficulty of nursing

will make it certain that not many women will engage upon it as a career without going through complete training.

After the war it is certain that the scope of women's work in medicine and nursing, in sanitation, as health visitors, and in teaching, will be immensely widened. We think that the gloomy deductions from the increase in the infant death-rate in some localities are premature, but there can be no doubt that efforts will have to be made to keep the population healthy and to conserve life in every possible way. Just how far the increased activity of women in all spheres of life may react upon the birth-rate is a disputed question, but women are sure to be employed in combating any evils which may result from a low birth-rate. Medical women will find fields of congenial work in the treatment of diseases peculiar to women and children, and as medical officers for children's clinics in connexion with a proper system of inspection in regard to child life, while midwives and nurses will obtain many fresh opportunities for exercising their callings. Sanitary inspectors and health visitors will also be needed, and in these departments women will play an increasing part. In the teaching profession scope will be found for medicine in the education of physical defectives and in the imparting of domestic hygiene. The extension of women's sphere in medicine thus foreshadowed is taking place, and the part which they will be called upon to play in the years that follow the signing of peace is of extreme interest. So many of the women employed in attending the wounded, whether as doctors or nurses, have acquitted themselves with more than credit that it is sure that many others will want to follow in their professional footsteps; but the employment of large numbers of women in any occupation outside the sphere of the home has an important bearing on the very *raison d'être* of the medical profession itself—namely, the health of the nation. It looks as though the far-reaching work, falling under the designation of medical, that may be done by women in the immediate future, will be the starting-point of great social readjustments.

THE ROYAL MEDICAL BENEVOLENT FUND.—The annual report of the Royal Medical Benevolent Fund for the year 1914 is a record of excellent work in helping distressed members of the medical profession, their widows, or orphans, by grants of money and by providing annuities for those who have reached the age of 60 years. The amount distributed by the Fund was £5392, or an increase of £182 over the previous year. In addition, the Guild of Ladies which works in connexion with the Fund distributed over £540. The balance sheet shows that the income for the year 1914 was £6043 for the Fund and £1332 for the Guild. The grand total, after adding a sum derived from the investment of the Emergency Fund, was £7480. The need for such an institution is shown by the number of cases requiring relief published periodically in our columns, and at no time in the history of the Fund has it required more support than now. The bankers are the London County and Westminster Bank, Limited, 21, Hanover-square, and the honorary treasurer is Dr. Samuel West, 15, Wimpole-street, W.

Annotations.

"Ne quid nimis."

THE STATE AND MATERNITY CENTRES.

THE Local Government Board and the Board of Education have agreed upon a joint scheme under which grants will be given in aid of maternity centres and of schools for mothers. Grants are now paid by both Government departments in aid of various institutions or agencies, whether known as schools for mothers, baby clinics and dispensaries, or maternity centres, which aim at promoting the health of mothers and little children not registered in day nurseries, nursery schools, or public elementary schools, and it has now been agreed between the two departments, with the approval of the Treasury, that in respect of the work done in the financial year commencing April 1st, 1915, the following arrangements should be adopted:—

1. The Local Government Board will pay grants in respect of approved institutions or agencies provided by a sanitary authority (or county council acting through its public health committee) or for the work of which a sanitary authority (or county council) takes entire financial responsibility. These grants to institutions will be made under the general heading of grants for maternity centres.

2. The Board of Education will pay grants in respect of schools for mothers as defined in Article 2 of their Regulations for the year 1914–15, subject to the following qualifications: (*a*) That an institution will not be recognised as a school for mothers unless collective instruction by means of systematic classes forms an integral part of its work; (*b*) that grant will only be paid in respect of "infant consultations" which are provided for women attending a school for mothers; (*c*) that grant will only be paid in respect of expenditure on "home visiting" of children registered at a school for mothers if neither the sanitary authority nor county council undertake to arrange for such visiting; (*d*) the fact that a school for mothers receives a grant or assistance from a sanitary authority (or a county council) or its officers will not disqualify it from receiving a grant from the Board of Education.

3. The Local Government Board will pay grants in respect of voluntary infant consultations which are not aided by the Board of Education as schools for mothers, only if they are directly connected with the work of a sanitary authority (or a county council).

It has been arranged that all the State aid to a single institution or agency shall be given by one department only, regard being had to the predominant character of the institution or agency, though joint aid by both departments in exceptional cases is not precluded. Regulations have now been issued by both departments as to payment of grants for the year 1915–16.

THE WATERLOO WOUNDED.

A STANDARD authority on the hygiene of war and the wounds sustained by our soldiers at Waterloo is a work[1] by John Thomson, professor of military surgery at the University of Edinburgh. Professor Thomson, one of a long dynasty of Scottish professors of that name, was reputed by his contemporaries at the time of his death in 1846 to be the most learned physician in his native Scotland, and by 1816 he had visited and examined into the practice of the medical schools of Europe and the hospitals of France, Italy, Austria,

[1] Report of Observations made in the British Military Hospitals in Belgium after the Battle of Waterloo, with some Remarks upon Amputation. 1816. 8vo. Edinburgh.

Germany, and Holland. He was therefore well fitted to report on the Waterloo cases, and it is interesting to compare his accounts with those of the present. The battle, he tells us, was fought about a month before the beginning of the "sickly period" in Belgium, an unhealthy season of annual occurrence due, our authority supposes, to the low-lying character of the country. Our troops went into battle in excellent condition. After the battle the wounded found good accommodation in hospitals and private quarters. The people of Brussels and of Belgium at large distinguished themselves by their zeal in behalf of the British wounded, of whom, according to Thomson, there were 8000. "In Brussels on the day after the battle, as I have been informed by a very intelligent eye-witness, the streets and squares presented a most singular and interesting spectacle. The shops were shut, the people were at their doors administering cordials, and offering dressing to the wounded, taking the tenderest care of them. The most delicate females, and people of all ranks, were occupied in this manner." There were, it seems, wounded in nearly every house and hundreds in the streets, and not only the civilian population, but the army surgeons were as a body quite exceptionally devoted to their healing work. His report on the British hospital arrangements is interesting: "No contagious fevers existed in any of the hospitals in Brussels or Antwerp, nor did any such make their appearance in them during our stay in Belgium. The great attention which we saw everywhere given to cleanliness and to ventilation in the British hospitals must undoubtedly have had a powerful influence in preventing the occurrence of contagious diseases. The habits, also, and discipline of our troops in regard to personal cleanliness, and the pains which were taken to remove every kind of impurity from the wards ..... must have contributed greatly to the same purpose." Here Thomson speaks of cleanliness in hospitals as a well-established principle, though he is manifestly ignorant of bacterial infection. Only two diseases, he further remarks, could be said to prevail in the Belgian hospitals apart from symptomatic affections dependent on wounds. These two diseases were fevers of a bilious character and hospital gangrene. The last mentioned was treated by "the application of caustic substances, such as the strong mineral acids, the solutions of potass, of corrosive sublimate, and of arsenic, &c." At Antwerp this treatment, he says, seemed "to arrest the progress of the sore without exciting inflammation." Thus was antisepsis adumbrated. In Brussels, where the wounds were more inflammatory, milder applications were used, "such as the common and carrot poultices." The cautery was in vogue among French surgeons at the time, and Napoleon's famous army surgeon, Larrey, employed it in the treatment of tetanus, which seems to have been mild in this campaign. Thomson wonders how soon Larrey may discover a better remedy for the cure of tetanus, but adds that the effects related as resulting from the application of this remedy are so sudden in their appearance, so marvellous, and so unlike what have been observed in the supposed cure of this disease that, but for Larrey's high authority as a surgeon, he would have had difficulty in crediting the results. Thomson's book is mainly devoted to wounds and to amputation. Of the former those produced by canister and grape were often terrible, while their results seem in many ways to have coincided with those of which our medical officers with the Forces are now dealing. It will come as a surprise to learn that the hospital arrangements of 100 years ago, limited though they might be by the range of knowledge at that time, were so good; the probability is that there was sufficient accommodation to prevent the terrible perils of overcrowding, which would largely account for the low mortality among hospital cases.

APPRENTICESHIP AND CONSCRIPTION.

IN another column there will be found a letter from Dr. R. C. T. Evans calling attention to a scheme which he formulated seven years ago, and which he has since worked out more fully in a pamphlet which can be obtained from the publishers (Messrs. Stanbrook and Sons, Herne Bay) on application. The scheme is a corollary of the "Report of the Consultative Committee on Attendance, Compulsory or Otherwise, at Continuation Schools," and supports the warnings of Lord Roberts as to our unpreparedness for a war, which the author can fairly claim to have predicted with assurance. The fundamental idea is that all boys between the ages of 14 and 17 years should attend compulsory continuation technical schools, preferably whole time and residential, where they would be taught trades. The arrangements whereby the multiplicity of trades could be suitably and simply catered for are ingenious, while the satisfactory training of the sons of business and professional men is also considered. One of the compulsory subjects of this apprenticeship would be physical training and thorough drilling. Dr. Evans thinks that the normal youth would leave the technical school not only a self-respecting member of society equipped for earning his own living, but also a trained civilian soldier, with his proper post in the Reserve, while liable to certain periodical training and to be called up for home defence. Such a force, he suggests, would not be used abroad except by special Act of Parliament, but, when soldiers are urgently needed and volunteers are called for, each volunteer coming forward would be, under this scheme, a trained man with equipment, and we should not have a great delay, costly in life and property, in filling our ranks. We recommend the pamphlet to our readers; they may not see eye to eye with the author, but they will find food for thought in an ably conceived and carefully-worked-out scheme.

PLAGUE, CHOLERA, AND YELLOW FEVER THROUGHOUT THE WORLD

SOME 50 years ago, when the Privy Council was the central health authority for England and Wales, and the late Sir John Simon, K.C.B., was the distinguished chief of its medical department, steps were initiated whereby a careful watch was kept upon the occurrence of foreign epidemics, and particularly upon those due to plague, cholera, and yellow fever. In the annual report of the medical officer to the Privy Council for 1865 there appeared the first of an almost unbroken series of epidemiological studies relating to exotic diseases, and in this particular instance dealing with the diffusion of cholera in Europe, written by the late Mr. J. Netten Radcliffe. Since then the annual reports of the medical officer to the Privy Council, and subsequently those of the medical officer to the Local

Government Board, have, with a few exceptions, contained year by year an epidemiological summary dealing with one or more of these diseases, and latterly with all three of them, written during the long period from 1865 to 1912, by the following experts in succession—namely, Netten Radcliffe, Thorne Thorne, Frederick Barry, and Bruce Low. The annual summary for 1913 has just been issued by the Local Government Board as a separate publication and not in the medical officer's annual report for 1913–14, owing, it is stated, to unavoidable delays in its preparation. It is contributed by Dr. R. W. Johnstone, British Representative at the International Office of Hygiene, Paris, who now takes his place as the official epidemiologist and historian of plague, cholera, and yellow fever, and it gives a very interesting account of the incidence of each of these three dangerous epidemic diseases throughout the world during the year.[1] It appears from this report that plague continued in 1913 to prevail in almost every part of the known world, and that so far there were no very obvious indications observed suggesting that the present pandemic, which began some 20 years ago, was about to subside. It is true that in India, which hitherto has been one of the worst sufferers from this dangerous disease, a decrease in the number of recorded plague deaths was observed in 1912 and again in 1913, the fatal plague cases numbering respectively 306,448 and 217,148, as compared with 846,873 in 1911; but, on the other hand, the provisional death returns for 1914 show an increase in the number of plague deaths in that country over those of 1912. Europe, save for some sporadic cases, mostly imported instances, seems to have escaped almost altogether from the disease during 1913. Dr. Johnstone, among other things, directs attention to the important relations existing between enzootic plague and continued endemicity of the disease in certain parts of the world. There was less cholera in 1913 in India than in some previous years, about 296,000 deaths being reported, as compared with 407,706 in 1912 and 354,005 in 1911. Attention is especially called by Dr. Johnstone to the accumulation of evidence tending towards the inculpation of the Indian pilgrimages, bathing fairs, and other religious gatherings as factors in the diffusion of cholera infection. It appears that special efforts are now being made by the various provincial Governments of India to secure stricter sanitary supervision of the places where pilgrims assemble in large numbers or where religious ceremonies on a great scale are conducted. Efforts, too, are being made to educate the native populations in the elements of personal and public hygiene. The scientific investigation of the numerous problems connected with cholera in India continues to be carried out by the skilled experts belonging to the Indian Medical Service. Some interesting epidemiological facts are mentioned in connexion with the outbreak of cholera which appeared in the Balkans during the military operations of 1912–13. With respect to yellow fever, which fortunately has a much more restricted geographical distribution than either plague or cholera, Dr. Johnstone's report informs us that there were no very serious or widespread outbreaks of this disease during 1913. The incidence and subsequent control of this epidemic malady seem to be more carefully supervised at the present time than in the past by the local authorities in the endemic areas, and particularly in the British colonies on the West Coast of Africa, where special researches were in process of being carried out in 1913 with a view of isolating and identifying, if possible, the specific parasite of yellow fever. The complete results of these investigations, however, have not yet been published. These annual summaries issued by the Medical Department of the Local Government Board relating to plague, cholera, and yellow fever, and written by skilled epidemiologists, possess more than a passing interest. They place on permanent record many facts and figures, relating to the history and geography of exotic disease, collected from a number of official or otherwise trustworthy sources distributed all over the world. Their true value, perhaps, is more likely to be recognised rather in the future than at the present time. They will be of service as works of reference, for example, to future students of plague when the great pandemic now prevailing has spent itself and disappeared; the same remark holds good as regards cholera and yellow fever, both of which may before long, we hope, come to be placed on the list of disappearing diseases.

[1] Dr. R. W. Johnstone's Report to the Local Government Board on the Progress and Diffusion of Plague, Cholera, and Yellow Fever throughout the World during 1913. London: H.M. Stationery Office. Pp. 110. Price 1s.

SCLEROSIS OF THE ARCH OF THE AORTA.

IN the last volume of St. Bartholomew's Hospital Reports Dr. A. E. Garrod and Dr. A. Geoffrey Evans have published a remarkable case in which sclerosis of the aortic arch caused obliteration of the pulses in the neck and upper limbs. A retired quartermaster sergeant, aged 51 years, was admitted with the history that attacks of giddiness began 12 months before and lately became so bad that he had difficulty in walking. For seven weeks he had suffered almost continuously from substernal pain. There was no history of syphilis, alcoholism, excessive work, or strain. For the last ten years he had done clerical work. On examination he was wasted and weak. His complexion was sallow with pink cheeks, suggesting a diabetic facies. Carotid pulsation was scarcely perceptible (later it ceased). The temporal arteries stood out, but did not pulsate. There was no brachial or radial pulse. Later a small pulse could occasionally be felt in the right radial artery. Pulsation in the femorals was forcible. The veins at the root of the neck were distended and visibly pulsated. The heart was hypertrophied; the apex beat was in the seventh intercostal space, two finger-breadths beyond the nipple line. Deep cardiac dullness extended upward to the third rib and one finger-breadth to the right of the sternal margin. There was dullness over the manubrium sterni. At the aortic base a short systolic and louder diastolic murmur were heard. The venous obstruction and dullness over the manubrium suggested aneurysm, but a skiagram showed no evidence of this. The aortic arch showed clearly, its outer wall appearing in the negative as a well-defined white line, owing to calcareous infiltration. The lungs were emphysematous. The extremities were of a rosy colour and the hands were rather cold. The urine contained a trace of albumin. The Wassermann reaction was negative. Atheroma of the aortic arch with dilatation of the ascending part and aortic regurgitation were diagnosed. Obliteration of the main vessels at their origin from the arch was surmised. Œdema of the lungs developed

and proved fatal 14 days after admission. At the necropsy the liver showed a typical nutmeg appearance. There was an innominate aneurysm filled with laminated clot. The left ventricle was hypertrophied and dilated. The aortic cusps were thickened and stretched, but not calcified. The aorta was extremely atheromatous. The arch was dilated, and in the situation of the orifice of the innominate artery was an aperture measuring 12 by 15 mm. leading into an aneurysm. No communication between the innominate artery and the right subclavian and carotid arteries could be found. The orifice of the left carotid was narrowed to a slit, partly by endarteritis and partly by pressure of the aneurysm. The left subclavian was much narrowed at its origin and was blocked by a firm red clot. The basilar arteries and circle of Willis were in good condition. The peculiar feature of the case was the obliteration of the pulses of the head, neck, and upper limbs without corresponding disturbance of function. Many cases of complete occlusion of a large vessel have been reported with absence of gangrene, and indeed with comparatively slight symptoms. In this case the most important symptoms were giddiness, præcordial pain, and general loss of strength and weight. In spite of the obliteration of the pulse in either arm there was never numbness, tingling, or loss of sensation, and the hands were of a good colour. The only evidences of poor blood-supply were muscular weakness and coldness of the hands. Occlusion of a large vessel near its origin from the aorta is made good by a collateral circulation. How this is effected was first shown by Darrach. In a case of aneurysm of the aorta with occlusion of the innominate and left carotid arteries he found that the collateral circulation was effected by anastomosis of the inferior thyroid arteries. The absence of impairment of mental activity has been noticed in other cases. In a case recorded by the late Sir William Gull there was no pulse in the right carotid or radial arteries and only a feeble pulse in the left carotid. In this case post mortem the orifices of the innominate and left common carotid arteries were found obstructed, only the left vertebral supplying the head.

EVOLUTION AND DISEASE.

IN his Chadwick lectures on the Evolution of Epidemics in 1913 Dr. J. T. C. Nash attempted "to deal philosophically with the problems of epidemics in a semi-historical manner." He has now published a little work[1] based on these lectures in which, after some introductory chapters on the historical records of famine and plague in the Middle Ages, the main point of the argument is set forth in Chapter IV.—namely, that "it is possible that some diseases, which can now be differentiated as distinct diseases, may at one time have been less clearly distinct"; and that "though there is little evidence in this direction, it is conceivable that a saprophytic organism, under varying environment (in the way of season and light), or of pabulum (semi-putrid flesh or vegetable), may be capable of transformation into, e.g., the lepra bacillus (or streptothrix) on the one hand, or into the, as yet unknown, organism of pellagra on the other." Although Dr. Nash follows this up immediately with the admission that "it is equally likely that the somewhat similar symptoms of leprosy and pellagra may be the results of interaction between the same susceptible tissues and two distinct organisms," the general trend of his argument is that evolution of specific pathogenic properties does exist in disease-causing organisms, and that there does not exist the same (apparent) permanence of characters and properties in bacteria as in animals and plants of more highly developed organisation. That this is an eminently reasonable proposition is suggested by the fact that it has been more or less explicitly stated by many previous writers—Dr. W. B. Carpenter, Sir William Aitken, Sir W. J. Collins, Mr. K. W. Millican, Lieutenant-Colonel A. M. Davies, and others not mentioned by Dr. Nash. Dr. Nash well works it out in the succeeding chapters. In Chapter XII. will be found the most important evidential facts and arguments, derived from (1) field-work epidemiology and clinical observation; (2) bacteriological investigations; and (3) philosophical induction. Dr. Nash rightly insists that insanitary conditions "may serve no inconsiderable part in communicating pathogenic properties to ordinary saprophytic organisms, or in lowering the resistive power of individuals to infection." The evolution of a diphtheria outbreak and the occurrence of cases of what appeared, in the words of Sir Richard Thorne, "to be nothing more than a simple inflammation of the throat, which yet led, by transmission through other persons, to cases of well-marked and severe diphtheria," furnish one example, and the close relationship between typhoid and paratyphoid organisms furnishes another, of the difficulty in conceiving either of these diseases as immutable entities, or of their causes as absolutely fixed in biological character. If such were the case, it would be contrary to the fundamental principles of evolution. Dr. Nash states (p. 55) that variability among bacteria first forced itself upon him in 1900, when, on making an early microscopical examination of a young subculture of *Actinomyces streptothrix*, he found the early forms indistinguishable from streptococci. The same idea has, no doubt, presented itself to many bacteriologists and pathologists, perhaps many years earlier than the date mentioned; it is an eminently reasonable one, and in all probability will eventually come to be recognised and adopted, to the exclusion of the theory of absolute and immutable specificity, as expressed by Liebermeister: "No matter how well a field is manured, wheat will not grow unless wheat has been sown." This is true, and yet one may believe that there was a time when neither wheat, nor oats, nor barley existed, but a grain having some of the characters of each and from which the existing species have evolved. What has occurred during thousands of years in a cereal development may be brought about more rapidly in a bacterial evolution.

[1] Evolution and Disease. By J. T. C. Nash, M.D. Edin., D.P.H. Camb., &c. Bristol: John Wright and Sons. 1915. Pp. 73. Price 3s. 6d. net.

Mr. Edmund Owen, consulting surgeon to St. Mary's Hospital and surgeon-in-chief to the St. John Ambulance Association, was admitted to the Charing Cross Hospital on Tuesday suffering from a paralytic stroke. His condition is an anxious one, but signs of improvement had manifested themselves by Thursday morning.

Dr. F. A. Bainbridge, professor of physiology in the University of Durham, has been appointed to the chair of physiology in the University of London, which is tenable at the medical school of St. Bartholomew's Hospital.

FOUNDER'S DAY at Epsom College will be celebrated on Saturday next, July 24th.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

IRISH BRANCH OF THE BELGIAN MEDICAL RELIEF FUND.

THE committee appointed to collect funds for the distressed medical practitioners and pharmacists in Belgium met in the Middle Hall at the Royal College of Physicians of Ireland on Thursday, July 8th, Mr. R. DANCER PUREFOY, ex-President of the Royal College of Surgeons, being in the chair.

Dr. C. M. BENSON (secretary to Council, Royal College of Surgeons in Ireland) and Dr. T. P. C. KIRKPATRICK (registrar, Royal College of Physicians of Ireland), the honorary secretaries, reported that a sum of £999 had been collected from among the medical practitioners and pharmacists of Ireland, which, with £10 13*s*. 7*d*. interest allowed by the bank, brought the total of the Fund to £1009 13*s*. 7*d*. The expenses incurred in the collection amounted to £26 10*s*., leaving £983 3*s*. 7*d*. for distribution.

On the motion of Dr. J. M. FINNY, and seconded by Sir JOHN W. MOORE, the report was unanimously adopted, and it was decided to pay off the expenses and to hand over the balance to the Executive Committee in London, whose agents are having the funds distributed in Belgium. A vote of thanks to the honorary secretaries was adopted.

The following subscriptions have been recently received:—

	£	s.	d.
The Belfast Drug Association	5	5	0
The Dublin Retail Drug Association	10	10	0
Dr. C. Dundee	1	10	0
Dr. J. H. Glenn	5	5	0
Dr. J. J. Gannon	1	1	0
Dr. E. F. Kough	1	1	0
Dr. M. E. Lennon	5	5	0
Dr. J. Marnan	1	1	0
Dr. E. J. Watson	5	5	0
Dr. W. J. Wilson	1	0	0

THE WEEK'S SUBSCRIPTIONS.

The week's subscriptions again show the deep and generous interest taken in the Fund by the British colonies, the sum received from the South Australian branch fund now amounting to £400.

	£	s.	d.
Dr. F. de Havilland Hall (4th donation, total £8 3*s*.)	1	0	0
Dr. H. Gibbons	0	10	6
South Indian Branch, B.M.A. (2nd donation, total £62 10*s*.)—Capt. Skinner, I.M.S., Rs.50; Dr. Rungappa, Rs.5; Dr. E. M. Walters, Rs.15; Dr. E. E. Tucker, Rs.15; Dr. Margaret Macphail, Rs.16.4; Dr. T. R. Lakshmi Pillai, Rs.5; Dr. G. Venkataswami, Rs.5; Dr. A. Y. Narayanrah, Rs.5; Major Symons, I.M.S., Rs.15; Capt. Russell, I.M.S., Rs.15; Dr. Amy Lillington, £2 2*s*.	12	10	0
South Australian Belgian Doctors' Relief Fund (per the Agent-General) (2nd donation, total £400)	150	0	0
Oldham Medical Society (per Dr. H. Pochin, Hon. Sec.) (4th donation, total £76 11*s*.)—Dr. Martin	2	2	0
Oldham Pharmaceutical Association (per Mr. H. Bagshaw)	5	0	0
Sunderland Pharmaceutical Association, collected from Members of (per Mr. C. Hodgson)	9	0	0
Somerset Pharmacists' Association (per Mr. S. G. Tydeman)	2	2	0
North Devon Association of Pharmacists (collected by Mr. W. J. Shepperd, Hon. Sec.)—Mr. F. Dyson	0	10	0
Mr. J. J. Handford ...	0	10	0
Mr. W. D. Joce	0	10	0
Mr. G. M. Pitt	0	10	0
Mr. E. W. Proudman	0	10	0
Mr. J. Ravenshaw ...	0	10	0
Mr. J. H. Scott	0	10	0
Mr. W. J. Shepperd ...	0	10	0
Miss A.M. Nicol, collected in weighing machine	0	10	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Ltd.

THE APPEAL FOR SURGICAL INSTRUMENTS.

Surgical instruments should be sent to the Master of the Society of Apothecaries, Apothecaries' Hall, Blackfriars, E.C.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Wounds of the Cervical Cord in War.

M. Pierre Marie and Mme. Benisty have made clear the doubtful result in certain injuries of the cervical cord in wounds in warfare, and the necessity for treating these lesions with care in patients who very frequently survive the traumatism of the cord. Injury of the cervical cord by a projectile gives rise most frequently to the following syndrome: a sensation as of a blow with a stick in the nape of the neck, a sudden falling forward without loss of consciousness, immediate paralysis of the four extremities, sometimes involuntary micturition or defæcation, and frequently impossibility of articulation. During the early days painful phenomena occur in all the limbs, which become localised little by little in one side of the body only, then in a limb. There is hyperæsthesia of the paralysed side. The duration of the paralysis varies from some weeks to several months. Incoördination may be noted on the paralysed side. In two patients under the care of these observers an intermittent Claude Bernard-Horner syndrome was observed, sudorific troubles of the face, undoubtedly in relation to a direct lesion of the trunk of the great sympathetic. M. Marie attributes the possible cure of wounds of the cervical cord to the free play afforded in the vertebral canal, which is greater in the neck. The cord can be deflected before the bullet without fatally scraping itself against the bony walls of the canal, as it does in the dorsal region.

Morphine Habitués and Mobilisation.

A very interesting discussion took place recently at the Société de Médecine Légale. Among those whose mode of life has been greatly deranged by the war are the drug habitués, and especially those addicted to morphia. Since the war broke out, in consequence of the mobilisation of their habitual purveyors of the drug, the *morphinistes* have encountered very great difficulty in obtaining their habitual poison. The sufferings of some of them as a consequence of this compulsory weaning have been so great that to put an end to them they have voluntarily presented themselves at Sainte-Anne, there to undergo the process of demorphinisation. At the present time male habitués are less numerous in the retreats than female, because mobilisation has drawn into the army the greater part of the male population of the age at which men are most prone to abandon themselves to the habit. As to those who have been in the army, some have not broken their fatal habit; others being no longer able to obtain the drug have been cured by the force of events; the army has had over them a great moral influence. M. Briand brought this subject up before the Société de Médecine Légale, and M. Gilbert Ballet continued the discussion by showing that a morphinomaniac may be a good soldier if he is judiciously supplied with morphine before setting out and if it holds out. If in spite of the morphine he fails, he is a sick person to be sent to the ambulance and treated like any other military patient. As to those who to escape their duty take a large dose and fall into a torpor, they should be classed with those who voluntarily mutilate themselves. The ravages caused by morphine and cocaine have increased,

and before the return of opportunity means for removing the abuse are being sought. The opium dens may be closed, pharmacists who dispense the drug without a prescription arrested, and the traffickers in morphine or cocaine prosecuted, but no action can be taken against the morphine and cocaine habitués no matter what quantity of the poison is found in their possession. The legislature should prescribe in formal and precise terms that the keeping of opium or its derivatives, outside of certain ordained cases, is not only prohibited but is liable to penalty. It is necessary that cocaine should be explicitly included and be subjected to the same prohibitions as opium. The traffic is a paying one. A gramme of cocaine, which is bought by these dealers for from 10 to 15 centimes, is sold by them at from 2 to 3 francs. Not only has the irresistible passion of certain maniacs to be counted with, but also the not less redoubtable cupidity of the dealers.

Treatment of Cerebro-spinal Meningitis.

At the medical reunion of the 4th Army M. Felix Raymond and M. Résibois pointed out that, with the taking of proper prophylactic measures, cerebro-spinal meningitis failed to pass from the endemic to the epidemic stage. Out of 33 cases observed 18 showed the meningococcus and 15 various microbes (enterococcus, streptococcus, pneumococcus, tetragenes, pneumobacillus, aseptic, undetermined microbes). Meningitis due to ordinary microbes was treated by free lumbar puncture, followed by the injection of colloidal gold. The percentage of cures was only 40. Meningitis due to the meningococcus was in like manner treated by free lumbar puncture frequently repeated, followed by a daily intraspinal injection of 40 c.c. of serum for the first two or three days, then of 30, and finally of 20 c.c. The injection should be stopped only when the fluid has been absolutely clear for two or three days. These strong doses have the advantage of rapidly overcoming the meningeal infection, of avoiding the sequelæ and also, because they are not long prolonged, very frequently accidents due to serum. The percentage of cures obtained by the observers was stated by them to be 70. Age plays a preponderant rôle, prognosis being infinitely more grave in the aged than in the young.

July 12th.

INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Triennial Reports on Lunatic Asylums in Bengal and the United Provinces.

A TRIENNIAL report for the years 1912–14 has been issued which deals with the lunatic asylums of Bengal as reconstituted in 1912. There are three asylums in Bengal—at Berhampore, Bhowanipore (24-Parganas), and Dacca. The figures quoted for the previous triennium refer to the asylums at these places. The problem of accommodation for the insane population of Bengal is one that has been before the Government for some years, and the statistics of population are therefore of special interest at the present time. The daily average strength was 1063·43 in 1912, 1084·51 in 1913, and 1068·76 in 1914, giving a mean average of 1072·23 for the triennium against 984·73 for the period 1909–11. This increase has been met by increased temporary accommodation, but a scheme is on foot for the addition of a new central asylum. The increase has not been the result of more admissions, for although the number reached the high figure of 237 in 1912 it fell during 1913 and 1914, and the yearly average for the triennium was 200 against 218 of the previous three years. While the decline in the past two years was in part accounted for by the closure of the Dacca Asylum to lunatics from Assam, it was more probably due to the endeavour which was noticed in the last triennial review to restrict admissions to lunatics whose detention in the asylum is absolutely necessary, and to exclude harmless lunatics who could well be supported and taken care of by their friends and relations. This view finds some support in the statistics of discharges, which show a considerable falling off in the number of cases discharged as cured during the same period. The mortality has shown no great change, but the fall in the number of cures in the past two years, coupled with the number of admissions, would tend to show that care has been taken to refrain from sending the less serious cases of lunacy to the asylums, and that the asylum population consists mainly of cases in which a cure is almost hopeless. It is likely, therefore, in future that the number of admissions will exceed to some extent the number of deaths and discharges and cause a rise in the daily average. The total annual average cost of the asylums has risen owing to an increase in the pay of the attendants and in the price of food. The average number of Europeans treated rose from 58 in 1909–11 to 60 in 1912–14, and accentuated the need for the new central asylum.

The triennial report on the lunatic asylums in the United Provinces for the years 1912–14 shows that the population of the three asylums increased considerably during the triennium under review. The total number of inmates, which at the beginning of the year 1912 stood at 1185, had by the close of 1914 risen to 1326. No less than 468 persons recovered, as compared with 367 in the period 1909–11.

Plague in Bombay.

It is 19 years since plague was discovered to be prevalent in Bombay city, introduced, it is believed, from Hong-Kong. Bombay has infected practically the whole of India. It has raged with more or less intensity all these years, usually developing its greatest energy in this city in the cold months. This year it is less menacing than malaria and ordinary fevers. There have been less than 300 plague deaths, as against 2200 during last year. This success is largely due to the splendid struggle of the Bombay municipality.

Snakes in the Punjab.

For some reason not known snakes have been considerably destructive to human life in the Punjab recently. During 1914 the mortality from this cause reached the high figure of 1169, as compared with 899 in 1913. Only twice before in the present century—in 1906 and 1909—has the total passed into four figures. The increase was more or less general throughout the province, but in Muzzaffargarh the deaths rose from 28 to 105, while Gujranwala had a larger number of deaths from snake-bite than any other district. The total mortality in the province from wild animals, apart from snakes, was only 16, of which one death was caused by a bear, the rest by wolves.

The Report of the Madras Chemical Examiner.

The report of the Madras Chemical Examiner has just been issued, showing that there were 220 cases of suspected human poisoning during last year, compared with 168 in the previous year for the same population. The percentage of detections was 52·7, as compared with 51·6. Arsenic was, as usual, the favourite poison, being followed by mercury, aconite, and atropine. The number of cases of suspected animal poisoning was 88, or the same as in the previous year. Here, too, arsenic and its compounds were the most common medium of poisoning.

Lady Doctors in Mysore.

Lady doctors in the service of the Mysore Government are henceforward to be styled lady medical officers and assistant lady medical officers, according as they are surgeon's or assistant surgeon's grade. There is no lack of lady medical officers or of assistant lady medical officers; but there is a great dearth of lady medical subordinates sufficiently qualified to take charge of minor dispensaries for women. The Mysore Government desire to establish more such dispensaries, but are hindered for want of qualified superintendents. To attract more lady subassistant surgeons they are increasing the rate both of scholarships and of salaries.

The Mysore Milk-Supply.

The Mysore Government has formulated a scheme for the direct encouragement of the industry of dairy-farming. Any approved person may obtain from the Government an advance up to as much as Rs. 5000, repayable in ten years, at 5 per cent. interest, or less; and he may lease from Government sufficient ground for the purpose of grazing or growing fodder. If well-equipped and well-controlled dairy-farms supply Mysore citizens with pure milk the citizens will be greatly advantaged.

June 20th.

THE NATIONAL INSURANCE ACT.

The Combination Regulations.

PROVISIONAL regulations have been published, dated June 22nd, 1915, made by the Insurance Commissioners and entitled "The National Health Insurance (Combination of Insurance Committees) Regulations, 1915." These regulations apply to any case in which under the provisions of subsection (5) of Section 59 of the Act the respective Insurance Committees for a county and a newly constituted county borough adjoining the county have agreed or are required by the Commissioners to combine for all the purposes of Part I. of the Act. The regulations are subject to such exceptions and modifications as may in any particular case be prescribed, and, save in certain circumstances, all the powers and duties conferred and imposed on an Insurance Committee by Part I. of the Act and any Regulations and Orders in force will be exercised during the period of combination by the Combined Committee. After the end of the period of combination the Commissioners may make such financial adjustments between the Combined Committee, the County Committee, and the County Borough Committee as may seem to them to be equitable and necessary.

The Edinburgh Burgh Insurance Committee.

A report, prepared by the clerk and treasurer of the Insurance Committee for the Burgh of Edinburgh, Mr. James Russell, has been issued on the administrative work of the committee from April, 1914, to July of this year. The machinery of medical benefit is shown to have involved a large amount of detailed and complicated work, but to be working smoothly. The difficulties encountered at the start were speedily overcome, and whereas in January, 1913, the committee had on their register 103,634 insured persons, at the date of report the number stands at 119,767. Details are given as to how, on the outbreak of the war, Approved Societies dealt with those who had enlisted, as to medical benefit to discharged soldiers, and as to how soldiers in civilian employment were dealt with. A scheme has been prepared and agreed upon for the assignment of insured persons requiring a doctor. This scheme was rendered necessary by the fact that many insured persons did not take the precaution to select a panel doctor till they found themselves requiring medical benefit. The Parliamentary divisions of the city, four in number, are taken as a basis for fixing the areas under which the assignment scheme would operate. Thus in the east division there were 30 doctors, in the west division 24, in the central division 29, and in the south division 31. Since the outbreak of war 21 members of the medical panel have gone on army service. The panel lists of those doctors on army service amount in the aggregate to 16,280 persons. In terms of their agreement with the committee the doctors received 7*s.* per annum in respect of each person on their lists, with an additional 6*d.* per person out of the drug fund, provided the expenditure therein did not exceed a certain limit. For the years 1913 and 1914 this "floating sixpence" had been saved for the doctors. The highest number of insured persons on the panel list of any one doctor in Edinburgh in 1913 was 2989, and in 1914 3025, and the lowest number was 53. The number of surgery attendances was 193,956 in 1914, against 157,079 in 1913, and the number of visits at patients' own homes was 80,938, as against 78,306. The highest number of attendances and visits made by any one doctor in Edinburgh was 10,999, as compared with 9181, and the lowest number was 84, as against 74. The highest sum paid to any one doctor in Edinburgh was £1104 8*s.* 5*d.*, as against £1062 14*s.* 1*d.*, and the lowest sum was £45 11*s.* 8*d.*, as against £94 1*s.* 1*d.* The highest average paid to any one doctor for each attendance or visit was 5*s.* 6*d.* in 1914, and the lowest average was 1*s.* 8*d.* The general average paid by the committee for each attendance or visit was 2*s.* 8*d.*, compared with 3*s.* 4*d.* in 1913.

Dispensing in the West of Scotland.

The honorary secretary of the Scottish branch of the Panel Medico-Political Union, Mr. J. G. Morrin, recently addressed a letter to the newspapers protesting against a resolution passed by the council of the Glasgow and West of Scotland Chemists' Association. This was to the effect that the body named had agreed to apply to the local authority for powers to close druggists' shops on Monday, Wednesday, Thursday, and Friday at 8 P.M. Mr. Morrin pointed out that as the shops in question are closed on Tuesday at 1 P.M. the step proposed would mean that except on Saturday and Sunday no person could obtain medicine or dressing between 8 P.M. and 9 A.M. next day. Mr. Morrin writes: "It is high-handed resolutions of this kind that will strengthen the growing demand among insured persons to have their medicines dispensed as well as prescribed by their panel doctor." Those who take into consideration the necessity which compels the working population to seek medical aid in the evenings will no doubt agree that the proposal made would be entirely against the interests of insured and other patients. The letter referred to points out that the busiest hours of the medical men in the districts affected are between 7 and 9 P.M., and continues: "It is most absurd to propose that patients should not have their medicines dispensed after 8 P.M." To this it might be added that medical men are compelled to perform their duties at any time of the day or night at which they may be called upon by those in need of their treatment. The scheme for curtailing working hours which the druggists in question are seeking to institute would suit many overworked medical men admirably, but they know that it would not be obtained without their patients suffering thereby.

Contract Fees and the Treatment of Juvenile Members of Friendly Societies.

Dr. T. Cuming Askin has written to us a letter protesting against the proposed course of the British Medical Association in this matter, and hopes that general practitioners will heed his warning at the forthcoming Representative Meeting of the British Medical Association. He asks for the rejection of the following recommendation:—

That the contract rates of medical attendance on the children of those persons eligible for the benefits of the Insurance Acts should be not less than 4*s.* 4*d.* per annum from the age of three years up to the age of 16.

"A contract rate of 4*s.* 4*d.*," he says, "ought not to be accepted in any circumstances except where it forms part of

a set of regulations such as those adopted by the Woodbridge and Felixstowe area of the South Suffolk Division of the British Medical Association. It was only after the most mature consideration that we agree to accept 4*s.* for juveniles. We may have been wrong in doing so, but in view of the otherwise satisfactory nature of the Woodbridge regulations we felt justified in yielding a little. We all know very well what will happen if the recommendation quoted is carried. 4*s.* 4*d.* will become the maximum rate and we shall be obliged to attend practically all children for this sum. If the Government step in later we shall be taken at our own valuation and be compelled to attend to these children for possibly a smaller sum and to keep accurate records of the work done."

The following are the regulations for non-insured patients of Sub-area 2 (South Suffolk Division of British Medical Association):—

1. Free choice of doctor.
2. Income limit: 30*s.* for country, 40*s.* for town.
3. State insured between 65 and 70, and who are friendly society members, to be treated at old rates for three months; and strong representations should be made to the Government to pay the doctor at the ordinary rates for insured people.
4. State insured between 65 and 70, and who did not belong to a Friendly Society, 8*s.* 6*d.* per annum.
5. Friendly Society members over 70 at the present rates, except where it is evident to the medical man that the patient is able to pay more.
6. Disabled and chronics at the old rates, except where it is evident to the medical man that the patient is able to pay more.
7. Members of Friendly Societies who are not insured under the State 8*s.* 6*d.* without tuberculosis, 9*s.* with tuberculosis.
8. Juveniles only, from 4 to 16, at 4*s.* each (male and female).
9. Women at same rates as men.
10. Charges for examinations 1*s.* each (new members). If the Government in the future make any allowance for any of the above-mentioned classes of patients the above scales to be revised.

These terms are subject to alterations at three months' notice by either side. Mileage over three miles to be charged at the option of the doctor, and paid to him by the patient. Extras for fractures, anæsthetics, consultations, confinements, and miscarriages, &c., as usual. Clause 10 indicates that the reduced rate of 4*s.* for children is a concession, and guards against advantage being taken of it.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF COUNCIL.

A QUARTERLY meeting of the Council was held on July 8th, Sir W. WATSON CHEYNE, the President, being in the chair.

The PRESIDENT reported the result of the election of members of Council, as already recorded in THE LANCET, and Mr. Ryall, Mr. Spencer, Mr. Burghard, and Mr. Waterhouse were introduced, made declarations in the terms of the oath prescribed by the charter of 1800, and took their seat as members of the Council. The President stated that Mr. Burghard became substitute member for Sir Rickman Godlee until 1921, and that Mr. Spencer would be substitute member for the late Mr. Lockwood until 1918. Leave of absence was given to Mr. Charters J. Symonds for the period of his service abroad.

Professor Johnson Symington was introduced, signed the by-laws, made the required declaration, and was admitted a Fellow of the College.

The SECRETARY reported the death on June 24th of Professor Frederick Howard Marsh, Master of Downing College, Cambridge, past Vice-President, past member of the Council, and past member of the Court of Examiners. A vote of condolence with the relatives was passed. The secretary also reported the death on June 30th of Mr. Richard Clement Lucas, past Vice-President and past member of the Council. A vote of condolence with the relatives was passed.

A report was read from Sir Henry Morris on the proceedings of the General Medical Council at their recent session. The report was received and entered on the minutes, and the best thanks of the Council were given to Sir Henry Morris for his services on the General Medical Council as the representative of the College.

It was announced that the treasurers had applied for £3000 of the new 4½ per cent. War Loan.

The following appointments were made: Hunterian Professors: Sir J. Bland-Sutton, Dr. Arthur Keith, Mr. J. E. S. Frazer, Mr. J. E. R. McDonagh, Mr. V. Z. Cope, and Dr. W. Blair Bell. Arris and Gale Lecturer: Dr. F. Wood-Jones. Erasmus Wilson Lecturer: Mr. S. G. Shattock. Arnott Demonstrator: Dr. A. Keith. Odontological Lecturer: Mr. J. F. Colyer.

Sir William Watson Cheyne was re-elected President and Sir Frederic Eve and Mr. Harrison Cripps were elected Vice-Presidents. Mr. Harrison Cripps was elected to serve on the Court of Governors of the University of Sheffield for the ensuing three years as the representative of the College in the vacancy occasioned by the death of Mr. R. Clement Lucas.

VITAL STATISTICS OF SCOTLAND:

THE NEW SERIES OF REPORTS.[1]

WE are indebted to Mr. J. Patten MacDougall, C.B., for copies of three statistical reports recently issued by him as Registrar-General for Scotland. With respect to subject matter and general arrangement the several reports conform to the revised scheme adopted at the recent Census; they may therefore conveniently be considered together. In a preface to the annual report for 1911, which was the first of the new series and was issued early in 1914, the statistical superintendent, Dr. J. Crauford Dunlop, attributed its tardy appearance (and prospectively that of the two succeeding volumes) to "unavoidable delays arising from the complete reorganisation of the entire system of preparing and publishing the Scottish vital statistics." It is confidently expected, however, that the arrears of work having been completely overtaken, the reports of future years will be available within six or seven months of the period to which they severally relate.

Highly commendable on the part of the Scottish authorities is the decision to bring their annual statistical reports into line with those of other divisions of the United Kingdom by contributing to the uniformity of tabulation and classification which is essential for comparative purposes.

In the introductory volume of the present series particulars were given of the principal changes there initiated, among which the following may be mentioned: (*a*) For the improvement of vital statistics arrangements were made at the recent Census for the substitution of public health areas for the registration districts previously employed as "geographical units" for purposes of classification; (*b*) provision was made for the correction of mortality statistics by the allocation to places of ordinary residence of deaths occurring elsewhere; (*c*) the international classification of causes of death was adopted in lieu of the system prevailing since the establishment of registration in 1855; (*d*) an improved method was introduced for the estimation of local populations; (*e*) the "Hollerith system" of mechanical card tabulation was adopted in place of the old-fashioned "ticking sheet." Among minor changes may be noted the tabulation of deaths by sex, age, and marital condition, as well as by cause, according to month of registration. A fuller tabulation of deaths of infants under one year is also given. Discussing the changes now introduced, Dr. Dunlop expresses regret at the consequent discontinuance of the grouping of registration districts into urban, rural, and insular areas. This grouping has been a feature of Scottish statistics ever since 1855, and is said to have been valuable as a means of emphasising differences of mortality in town and country. A grouping of burghal public health districts and of county or extra-burghal public health districts now replaces the older grouping by registration areas; and it is hoped that eventually a series of

[1] New Series of Reports on the Vital Statistics of Scotland. Glasgow: James Hedderwick, St. Vincent-place; London: Wyman, Fetter-lane. Price 2*s.* 4*d.*

figures will grow which will be equally valuable. A break of continuity in a serial publication like the present is obviously undesirable, but, in existing circumstances, it appears to be unavoidable.

Comparison of Scottish and English Vital Statistics.

Speaking generally, the statistics of *natality* in the British area north of the Tweed are fairly comparable with those of the area south of that river, and so, in most cases, are the statistics of *mortality* from the chief causes. Hitherto the analysis of mortality in England has been carried further than has been the case in Scotland; but as the Registrars-General of each division of the kingdom are known to be agreed concerning general principles there is every hope that in the early future the vital statistics of Scotland and Ireland will be rendered in every respect comparable with those of England. Heretofore the Scottish reports have not distinguished the mortality in public institutions from that occurring in the homes of the people, although it is probable that this information is contained in the records of the Registry Office. In the English reports this information appears, and has been specially elaborated since the Census year. Inasmuch as it is known that in some urban areas practically half of the male deaths occur in hospitals, workhouses, or lunatic asylums, where presumably the sick receive exceptional care and treatment, this circumstance will obviously affect the mortality in the aggregate. Whether, and to what extent, an Act for the compulsory notification of infectious disease is operative in Scotland we are not informed, and the reports before us are silent respecting the relative incidence of non-fatal sickness of this nature. It is well known, however, that in the larger cities at any rate extensive provision exists for the hospital treatment of the more dangerous epidemic diseases, and this circumstance will doubtless powerfully affect the mortality from these causes.

The birth-rate in Scotland, like that of England, has fallen almost steadily in recent years. In the year 1876 it was equal to 35·6 per 1000 living, whilst it fell to 25·9 in 1912 and to 25·5 in the following year, as compared with 23·9 in England. Calculated on the total population, the rate of birth was highest in the larger burghs, but when calculated on the number of women of conceptive ages it was highest in the county districts. In 1913 the illegitimate births in Scotland were in the proportion of 7·1 per cent. of all children born, against 4·3 per cent. in England and Wales. Among Scottish counties the percentage varied from 15·0 in Elgin to 3·8 in Shetland. The highest proportions of illegitimacy are recorded in the smaller burghs, amounting in some cases to 32·3 per cent. of the total.

Mortality.

In the year 1913 the mortality from all causes was equal to a corrected rate of 15·45 per 1000 of the population, which is slightly higher than that of the preceding year, but is below the average rate in the last decennium by 0·17 per 1000. The rate in England and Wales was 13·7. In Scotland mortality was highest in some of the smaller burghs—corresponding to 28·6 per 1000 in Invergordon and to 28·4 in Lawrence Kirk.

Infantile mortality in 1913 was at the rate of 109·6 per 1000 births, or 4·1 more than in the previous year. In England the rate in the first-mentioned year was 108. Among county or extra-burghal districts infantile mortality ranged from 167 in South Ronaldshay, 159 in Langholm, and 143 in South Uist, to 20 in Arran and 15 in Mull; no deaths at this age being recorded in the Walls district of Orkney. The rate was exceedingly high in some of the smaller burghs, but the proportion in these areas varies enormously from year to year. Of the diseases peculiar to infancy more than half were returned under the head of prematurity, the proportion in 1913 being slightly higher than in the year immediately preceding.

Causes of Death.

Of the total deaths in Scotland during the last quinquennium the causes of 98·1 per cent. were certified either by a registered practitioner or by a procurator fiscal, the causes of the remaining 1·9 per cent. being reported as uncertified. In 1913, as in previous years, the proportion of deaths uncertified was high in some of the Highland and insular counties. In Ross and Cromarty it amounted to 22·5 per cent., in Shetland to 21·9, and in Sutherland to 20·5. On the other hand, all the deaths occurring in Peebles were certified.

Typhus fever was responsible for the deaths of 7 persons only in 1913, against 14 and 8 respectively in the two preceding years.

Enteric fever caused a mortality of 4 per 100,000 in 1913 and also in the preceding year. Compared with the decennial average, the rates show a considerable reduction. In the year 1912 the mortality from this disease ranged from 10 per 100.000 in Motherwell and Kirkcaldy and 9 in Aberdeen and Falkirk, to 1 in Dundee, Paisley, and Leith. No enteric fever deaths were registered either in Hamilton or in Ayr.

Scarlet fever in Scotland, as in England, has shown a remarkable decline in mortality in recent years. From 1855 until 1884 the deaths from this disease had never been fewer than 1000 annually, and in the year 1874 they numbered 6321. In the year 1913 scarlet fever caused a mortality of 12 per 100,000, which is above that of the previous year by 3 and above that of the last decennium by 4 per 100,000. Locally the rate varied from 34 in Motherwell, 26 in Kilmarnock, and 23 in Greenock, to 3 in Perth and 2 in Paisley.

Diphtheria and croup taken together account for a mortality both in 1912 and 1913 equal to 17 per 100,000, which is less by 2 than the average in the preceding quinquennium. The rate ranged from 69 in Aberdeen, 34 in Hamilton, and 23 in Perth, to 6 in Kilmarnock and 5 in Paisley. Inasmuch as we do not know either what proportion of the Scottish deaths occur in hospital, or to what extent antitoxin has been employed in the treatment of diphtheria, the statistics of this disease are not at present strictly comparable with those of England.

Tuberculosis.

On both sides of the Tweed the decrease of mortality from tuberculosis in recent years has been remarkable. In the year 1913 Scottish mortality from all forms of tuberculosis was at the rate of 170 per 100,000, or less by 2 than in 1912 and less by 32 than the mean rate in the previous decennium. The rate for the first-named year was the lowest hitherto recorded. Previous to 1883 the annual rate was constantly above 300, culminating in a maximum of 404 in the year 1870. From 1883 to 1908 it was more than 200 but less than 300. In 1909 it fell below 200 and ever since then it has remained below that figure.

Pulmonary tuberculosis, or *phthisis*, caused in 1913 a mortality of 108 per 100,000 living of both sexes. This is the lowest rate on record; it was less by 4 than in 1912, and less by 12 than the mean rate in the previous quinquennium. On the average of the last three years phthisis mortality has been equal to 115 per 100,000 among males and to 108 among females. In 1913 the general phthisis death-rate ranged from 148 in Greenock, 143 in Glasgow, and 134 in Leith, to 54 in Kirkcaldy.

Tuberculous meningitis caused a death-rate in 1913 equal to 23 per 100,000, or 2 more than in the preceding year. Among the burghs the death-rate amounted to 41 in Leith and 36 in Hamilton. In Glasgow it was 30 and in Edinburgh 20.

Abdominal tuberculosis was responsible for a death-rate of 19 per 100,000 in 1913, against 18 in the previous year. In Kirkcaldy the rate was 52 and in Coatbridge 37. It was 21 in Glasgow and 12 in Edinburgh.

Malignant Disease.

As in other parts of the United Kingdom, and indeed in many foreign countries, the Scottish mortality from malignant disease has been increasing considerably for many years past. Both in 1912 and 1913 the malignant death-rate was equal to 110 per 100,000. Up to the year 1877 the rate was constantly below 50 per 100,000. In 1905 for the first time it rose to more than 90, and in 1909 for the first time to more than 100 in 100,000 of the population of both sexes. In 1913 the male cancer rate was 93 per 100,000 living of that sex, and the female rate 126 in the same number of females living, the former rate being 3 more and the latter 2 fewer than in the previous year. As in England and Wales, cancer is most fatal in Scotland at the more advanced ages, the highest rate being 1041 per 100,000 at ages over 75 years, whilst the rate is below 5 within the first 25 years of life. Among males the stomach, intestines, and liver are the organs most frequently invaded, and among females the stomach, breast, and uterus.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Deputy Surgeon-General: C. J. Mansfield, M.V.O., to the *Victory*, additional, for Haslar Hospital. Fleet-Surgeons: A. J. Pickthorn (retired) to the *Victory*, additional, for disposal; H. E. Tomlinson to the *Vivid*, additional; F. Bolster to the *Warrior*; F. W. Parker to the *Stephen Furness*, additional; and H. S. Burniston to the *Pembroke*, additional, for R.N. Barracks. Staff-Surgeon: J. R. A. Clark-Hall to the *Vindictive*. Surgeon: P. L. Gibson to the *Pembroke*, additional, for disposal. Temporary Surgeons: J. A. Watson and H. G. Anderson to the *President*, additional; G. A. Walker to the *Victory*, additional, for the R.N. Division; A. Craig to the *Stephen Furness*, for Sick Quarters at Invergordon; W. H. S. Hodge to the *Pembroke*, additional; N. C. Carver to the *Indomitable*; J. C. Sinclair to the *Spanker*; A. D. E. Bayliss to the *Swift*; A. N. Pollock to the *Hibernia*; T. Owen to the *Spanker*; H. B. Padwick to the *Victory*, additional, for R.N. Division; W. Ibbotson to the *New Zealand*; and G. S. Aspinall to the *Diamond*.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Charles Stonham, C.M.G., R.A.M.C. (T.F.), to be temporary Colonel (dated June 1st).

The undermentioned to be temporary Lieutenant-Colonels: Dated July 6th: Lieutenant-Colonel Sir Ronald Ross, K.C.B., R.A.M.C. (T.F.), Andrew Balfour, C.M.G., Leonard Stanley Dudgeon, and William Henry Willcox.

Major Sir Allan Perry to be temporary Lieutenant-Colonel whilst in command of a General Hospital (dated July 5th).

The undermentioned to be temporary Majors: Hubert William Austin Burke, late Fleet-Surgeon, R.N., (dated June 10th), Arthur Lapthorn Smith (dated June 12th), and Leslie Haden Guest (dated June 15th).

Captain Sir Victor Alexander Haden Horsley, R.A.M.C. (T.F.), to be temporary Major (dated May 14th).

Temporary Lieutenant Sydney D. Rowland to be temporary Major (dated Dec. 17th, 1914).

Douglas Walter Hume to be temporary Major whilst employed with the Norfolk War Hospital (dated June 29th).

Albert Paling to be temporary Major whilst employed with the County of London War Hospital (dated June 16th).

William Dewey Buncombe to be temporary Major whilst serving with the City of London War Hospital (dated March 24th).

The appointment of Christopher Thackray Parsons to a temporary majority whilst serving with the Fulham War Hospital is now dated April 1st.

The appointment of Frederick Sherman Toogood to a temporary majority whilst serving with the Lewisham War Hospital is now dated May 1st.

The undermentioned to be temporary Captains:—Dated June 14th, 1915: Arthur Burton and Temporary Lieutenant Henry MacCormac. Dated June 15th: Arthur Ernest Marsack, late Surgeon-Captain, 1st Volunteer Battalion, The Queen's (Royal West Kent Regiment). Dated June 21st: Ernest Henry Starling. Dated June 25th: Edward Percival Dickin. Dated July 14th: Temporary Lieutenant Hubert V. Leigh, late Captain 1 5th Battalion (Territorial), The Welsh Regiment, and Temporary Lieutenant Harry Fulham-Turner, late Captain, R.A.M.C. (Volunteers), Home District, The London Companies.

John Shirley Steele Perkins, late Surgeon-Captain, 1st Exeter and South Devon Rifle Volunteers, to be temporary Captain (dated June 7th).

Temporary Lieutenant Sidney W. Woollett to be temporary Captain (dated July 9th).

Lieutenant-Colonel Cecil A. Lane is retained on the Active List and to be supernumerary (dated July 11th).

Captain Charles M. Drew from the Seconded List is restored to the establishment (dated June 1st).

The undermentioned to be granted temporary honorary rank whilst serving with the Allied Forces Base Hospital: Dated June 28th: Lieutenant-Colonel: Major William E. Miles, R.A.M.C. T.F. Reserve. Major: Captain Thomas Jeeves Horder, R.A.M.C. (T.F.), and Harold Delf Gillies. Captain: Richard Galway Murray, Arthur Edwin Foerster, and John Southerden Burn.

Rhys Bevan John to be temporary Honorary Lieutenant (dated June 29th).

Temporary Lieutenant John J. Johnson relinquishes his commission on account of ill-health (dated July 1st).

Second Lieutenant Hugh James McCurrick, from Reserve of Officers, to be temporary Lieutenant (dated May 27th).

Temporary Lieutenant Donovan B. Pascall having ceased to serve with the British Red Cross Hospital, Netley, relinquishes his commission (dated June 21st).

James Patrick Smyth Dun to be temporary Lieutenant while serving with the British Red Cross Hospital, Netley (dated July 1st).

The appointment of temporary Lieutenant Trevor H. Fowler is antedated to May 15th.

The undermentioned to be temporary Lieutenants: Dated Feb. 24th: Dougan Bird. Dated May 12th: Edward Ronald Welsh, Howard Boyd Graham, William Lincoln Robertson, and Arthur Francis Bell. Dated May 13th: Thomas Lloyd Kenion and Wilfred Michael Thunder. Dated May 14th: Peter Gorrie, John Edwin Mackonochie Wigley, John Ernest Hodson, and Leonard James Pellew. Dated May 18th: Michael Joseph Gallagher. Dated May 20th: Francis Robert Brown. Dated May 25th: John Corcoran. Dated May 28th: James Gubbins Fitzgerald and Le Baron Botsford Wilmot. Dated June 1st: Andrew Halldie and Henry Montsarrat Rainsford. Dated June 5th: John Rhys Davies. Dated June 6th: William Samuel Ondeslowe Waring. Dated June 7th: Gerald Leo Kennedy, Henry William Drew, Leonard Newton Lee, William Johnston MacNab, Edgar Duke, Henry Warner Smartt, John Hunter, Angus Wylie, Lionel Everard Napier, Douglas Kenneth Parkes, John Pearson, Wilfred Reginald Taylor, Peter Paul Wright, Oswald Samuel Wraith, Harold Ettrick Moore, Cyril Edward Harrison, James Lowe Barton Dixon, George Brown Hillman, Evan Llewellyn Jenkins, David Clark Laird, Thomas Albert Hindmarsh, James Walker Darling, William Anderson Charles Henry Evers, Edward Davison Smith, Wyndham Parker, John Mills, James Ernest Long, Thomas Gill King, Vivian Gray-Maitland, Charles Stanser Bowker, Bernard Heynes Greensill, Henzell Howard Dummere, Alexander Joseph Vincent McDonnell, Ernest Francis Clowes, Augustus Charles Greenwood, John Cuthbertson Walker, Henry Roscoe Ibbotson, William Massingherd Middleton Jackson, Thomas Francis Keenan, John Thomarson, Jack Grenville Waine, William James Dobson Smyth, and Harold Widdrington Sykes. Dated June 8th: Joseph Christopher Lavertine, Frank Nangle Bury Smartt, and Farquhar William Matheson. Dated June 9th: Harry Ellis Brawn and Ishmael Edgar Bruneau. Dated June 10th: Second Lieutenant Ronald Thomson Grant (from Reserve of Officers), William Francis Law, Clarence Ham Sills, Francis Glancy O'Donohoe, Francis John Allen, James MacRae, Alexander Forbes Ross, Aubrey Aloysius O'Connor, Percy Peter James Stewart, Ellis Campbell Bowden, Arthur Bryans, Edward Robert Ramsey Cheesman, Thomas Cadzow Findlater, John Henry Davis, William Scott Hall, Denys Bouhier Imbert Hallett, Michael John Hackett, David John Lewis, George Francis May, Frederick Juland Rawlinson, Peter Latimer-Leitch Craig, Harry Oswald Smith, James Robert Karran Thomson, Walter Forsyth Hare, Evan John Griffiths, Henry Cecil Beasley, Horace Herbert Kendrick, and David James McLeish. Dated June 11th: Abraham Hipwell, Henry Smurthwaite, Watkin Watkins, and Henry Goff Kilner. Dated June 12th: Seymour Richard Gleed, Harold Stewart Casson Darbyshire, Robert Nairn, and Arthur Beresford Jones. Dated June 14th: James Massey Keegan, Harry Bertram Walker, Thomas Edward Cottu, Charles Henry Corbett, Henry Ulrich Leembruggen, Arthur John Turner, Walter Joseph Harper, Stewart Hodgson, James Eric Paterson, William George Simpson Thomson, Arthur St. John Bateman, Frederick Copeland, and Henry Francis Townshend Chambers. Dated June 15th: Harold Victor Walsh, William West Linington, Robert Vernon Girand Monckton, George Vert Thomson McMichael, Cyril Banks, James Dwyer Ryan, Alexander Gladstone Christian, Alexander O'Flaherty, Victor Blacker Kyle, Alphonsius James Vincent Mathews, Robert Buchanan Forbes McKail, Thomas Augustine O'Brien, Alfred Alexander Webster Petrie, Robert Rennie, Edward James Selby, William Robertson Logan, Alexander Grant, Theodore Cnalmers, George John Brown Candler-Hope, James William Edington, Archibald Gillespie, William Owen Travis, Harold Evan Thomas, Thomas Richard Earls-Davis, Charles Edward Dolling, Edward Allan Wilson, George Kenworthy Thompson, Charles Anderson Meaden, Albert Edward Hutton, John Appleyard, John Lamont, and John Nicholas Donnellan. Dated June 16th: Charles Edward Droop. Dated June 17th: Robert Nicoll, Jeffrey Alexander Amherst Orlebar, John Sutton Webster, Edward Spencer Holloway, James Taylor Grant, Oswald Clive Graeme Shields, and Frederick Grone. Dated June 18th: George Henry Roberts, Donald Bayne Crerar, George Lestock Thornton, George Herbert Brown, William Godfried Lorenz Wambeck, John McCallum Lang, Gerald Spencer Coghlan, and John Brodie Boyd. Dated June 20th: Aubrey Scott Gillett, Ralph Vincent, Alfred Martin Roome, Alexander David Crawford, Thomas Forrest Craig, Theodore Bell, Thomas Llewellyn Davies, Arthur Hurrell Style, Harold Ernest Lawrence, Hugh Hamilton Serpell, Angus Campbell, Charles Averill, and David Garrick Wishart. Dated June 21st: John Edridge Healey, Edwin Wallace Goble, Alexander Greig Anderson, David Rees Jones, Francis Vincent Hanratty, Robert William Lessel Wallace, Arthur Charles Rowsell, William Stuart Thacker, Henry Bartlett Shillingford, Thompson Ferris Wilson, John James Harrower Ferguson, and Donovan Blaise Pascall. Dated June 22nd: James Duncan Hart, John Francis Joseph Herbert, Walter Fell, and Frank Irvine MacKinnon. Dated June 23rd: Thomas Conrad Reeves and Richard Le Geyt

Worsley. Dated June 24th: Frederick Gustave Wooding Deane, Cyril George Galpin, Robert Bruce-Low, James Clark McKerrow, and Naughton Dunn. Dated June 25th: Harry Percival Gaston, Robert Sterling, John Samuel Ernest Selby, William Dunmore Murray, Thomas Peacock Seymour, Charles Arthur Purnell, Ernest King Gawn, David Gillespie, James Wilson Pettinger, Bernard Bradley Gough, Henry Moncrieff MacGill, William Stanley Finch, Robert James Harris, Harry Foster Holmden, Charles George Monro, Herman Gerald Dresing, Cuthbert Ede, Joseph Harvey Kemp Sykes, Andrew Leslie Edmund Filmer Coleman, Charles Kenneth McKerrow, John Thomas Myles, Edgar Faulks, Henry John Hoile, John Irwin Arnold, Arthur Francis Michael Mullane, Francis Patrick Kennedy, Vincent Edgar Badcock, Robert Fell, John Joseph Lawrence Ferris, Walter Henderson Scott, Hans Hill Sloane, Ernest Rowland Fothergill, John Barton Thompson Keswick, Lennard Game, Wilson Trevor Williamson, William MacLeod, and Alexander Mathieson. Dated June 26th: William Stevenson Brown Hay, Duncan Fletcher, and Douglas Allan Donald.

The undermentioned Lieutenants of the Canadian Army Medical Corps to be temporary Lieutenants:—Dated June 9th: Albert Arthur Wilson. Dated June 11th: Dugald Black MacLean, Charles Fraser Knight, Leo Zealand, Adam Fisher Menzies, Gerald Shaw Williams, William Ewart Campbell, Lorne de Corsia MacIntosh, Harry Burton Lawson, and Edward Vincent Sullivan. Dated June 21st: Robert Lyle Hutton.

The undermentioned to be temporary Honorary Lieutenants:—Dated June 22nd: Errington Atkinson, Owen Albert Beaumont, Andrew Royston Elliott, Lawrence Mansfield Ingle, Joseph Bulmer Thackeray, and Arthur Graham Winter. Dated June 25th: James Arthur Liley. Dated June 26th: Henry Hugh Mathias.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant (on probation) George G. Cooper is confirmed in his rank. Lieutenant Gerald Graham Alderson to be Lieutenant (on probation), with seniority next below J. M. Watt.

TERRITORIAL FORCE.

Army Medical Services.

Major John Tait, from 3rd Highland Field Ambulance, to be Deputy Assistant Director of Medical Services, Highland Reserve Division.

Major Ralph B. Sidebottom, from Attached to Units other than Medical Units, to be Deputy Assistant Director of Medical Services, Welsh (Reserve) Division.

Captain William H. Rowell, from the Territorial Force Reserve, to be Deputy Assistant Director of Medical Services, East Lancashire (Reserve) Division.

Royal Army Medical Corps.

Highland Mounted Brigade Field Ambulance: John Frederick Neary to be Lieutenant.

London Mounted Brigade Field Ambulance: Lieutenant-Colonel Charles Stonham, C.M.G., is seconded.

North Midland Mounted Brigade Field Ambulance: William Edward Kingdon to be Lieutenant.

South Wales Mounted Brigade Field Ambulance: Alfred William Warland Hayles to be Lieutenant.

2nd South-Western Mounted Brigade Field Ambulance: To be Lieutenants: Hubert Roy Dive and Wilfred Scovil Soden.

Welsh Border Mounted Brigade Field Ambulance: Major Douglas C. L. Orton to be temporary Lieutenant-Colonel.

1st Home Counties Field Ambulance: George Hislop to be Lieutenant.

2nd Home Counties Field Ambulance: Major Thomas H. Chittenden, from Attached to Units other than Medical Units, to be Major.

3rd East Lancashire Field Ambulance: Arnold Bosanquet Thompson to be Lieutenant.

3rd London (City of London) Field Ambulance: Captain Lawrence C. V. Hardwicke, from Attached to Units other than Medical Units, to be Major (temporary).

6th London Field Ambulance: Lieutenant Philip S. Price to be temporary Captain.

1st Eastern General Hospital: Richard Vincent Slattery to be Captain, whose services will be available on mobilisation.

4th London General Hospital: Harold Robert Dacre Spitta to be Captain, whose services will be available on mobilisation.

2nd Northern General Hospital: William Scatterty to be Captain, whose services will be available on mobilisation. Isa Carswell Marshall to be Lieutenant.

1st Scottish General Hospital: Lieutenant-Colonel Arthur H. Lister is seconded for duty with a General Hospital.

1st Southern General Hospital: Captain Leonard P. Gamgee to be Major.

4th Southern General Hospital: Major Russell Coombe is seconded for duty at Royal Victoria Hospital, Netley.

1st East Anglian Field Ambulance: Captain William D. Watson to be temporary Major.

1st South Midland Field Ambulance: Lieutenant Frederic E. France, from Attached to Units other than Medical Units, to be Captain (temporary).

2nd South Midland Field Ambulance: Lieutenant Ernest J. C. Groves is seconded.

1st London Casualty Clearing Station: Captain John W. Kemp to be temporary Major.

2nd London Sanitary Company: George Spencer Hoffman to be Lieutenant.

West Lancashire Casualty Clearing Station: Lieutenant William N. W. West-Watson to be temporary Captain (dated June 8th).

2nd London Casualty Clearing Station: Allan Campbell Pearson to be Lieutenant.

Attached to Units other than Medical Units.—Surgeon-Major Duncan G. Newton, from 4th (Hallamshire) Battalion, The York and Lancaster Regiment, to be Major. Captain Dudley W. C. Jones to be temporary Major. To be Captains: James Mackersie Johnstone (late Captain, 8th (Lanark) Battalion, The Highland Light Infantry) and Lieutenant Harold K. Griffith. To be Lieutenants: Robert Blackett Reed and Charles William James Brasher. Lieutenant Huntley N. Pelly and Lieutenant William J. Cruickshank resign their commissions on account of ill-health.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7681 births and 4072 deaths were registered during the week ended Saturday, July 10th. The annual rate of mortality in these towns, which had declined from 13·9 to 11·9 per 1000 in the five preceding weeks, further fell in the week under notice to 11·7 per 1000 of their aggregate population, estimated at 18,136,180 persons at the middle of last year. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 15·1, against a corresponding rate of 15·2 per 1000 in London. The annual death-rate last week ranged from 5·1 in Enfield, 5·6 in Tottenham, 6·3 in Norwich, 6·6 in Ealing, and 7·2 in Croydon, to 17·3 in Derby, 17·5 in Gateshead, 17·6 in Stockton-on-Tees, 18·8 in West Bromwich, and 21·4 in Barrow-in-Furness.

The 4072 deaths from all causes were 83 fewer than the number in the previous week, and included 342 which were referred to the principal epidemic diseases, against numbers declining from 489 to 328 in the five preceding weeks. Of these 342 deaths, 116 resulted from measles, 85 from infantile diarrhœal diseases, 50 from whooping-cough, 47 from diphtheria, 32 from scarlet fever, and 12 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·0 per 1000, and coincided with that recorded in the previous week. The deaths attributed to measles, which had declined from 239 to 132 in the five preceding weeks, further fell to 116 last week, and caused the highest annual death-rates of 1·6 in Halifax, 1·7 in Derby, 2·1 in Bootle, 3·0 in West Bromwich, and 3·3 in Middlesbrough. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had declined from 90 to 67 in the four preceding weeks, rose to 85 last week, and included 18 in London, 13 in Liverpool, 6 in Manchester, and 4 each in West Ham, Birmingham, and Sheffield. The fatal cases of whooping-cough, which had been 60, 62, and 57 in the three preceding weeks, further fell to 50 last week, of which 20 occurred in London and 3 in Manchester. The deaths attributed to diphtheria, which had been 45, 46, and 39 in the three preceding weeks, rose to 47 last week, and included 13 in London and 3 each in Northampton, Oldham, and Sheffield. The deaths referred to scarlet fever, which had declined from 29 to 18 in the four preceding weeks, rose to 32 last week; 6 deaths belonged to London, 3 each to Birmingham, Liverpool, and Manchester, and 2 each to Bradford and Sheffield. The fatal cases of enteric fever, which had increased from 7 to 15 in the four preceding weeks, fell to 12 last week, and included 3 in London and 2 in West Ham.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had increased from 2252 to 2446 in the six preceding weeks, further rose to 2471 on Saturday last; 322 new cases were admitted during the week, against 330, 332, and 348 in the three preceding weeks. These hospitals also contained on Saturday last 1021 cases of diphtheria, 59 of measles, 55 of enteric fever, and 9 of whooping-cough, but not one of small-pox. The 1000 deaths from all causes in London were 10 fewer than the number in the previous week, and corresponded to an annual rate of 11·5 per 1000. The deaths referred to diseases of the respiratory system, which had been 153, 144, and 145 in the

three preceding weeks, fell to 134 in the week under notice, but were 23 above the number recorded in the corresponding week of last year.

Of the 4072 deaths from all causes in the 96 towns, 221 resulted from different forms of violence, and 382 were the subject of coroners' inquests, while 1279 occurred in public institutions. The causes of 37, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Nottingham, and in 74 other smaller towns. Of the 37 uncertified causes of death, 6 were registered in Gillingham, 6 in Gateshead, 5 in Liverpool, 4 in Birmingham, 3 in Manchester, and 2 in South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,345,500 persons at the middle of this year, 1062 births and 705 deaths were registered during the week ended Saturday, July 10th. The annual rate of mortality in these towns, which had been 15·7, 15·7, and 16·6 per 1000 in the three preceding weeks, fell to 15·7 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 18·1, against a corresponding rate of 15·1 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 8·5 in Kilmarnock, 8·8 in Perth, and 8·9 in Kirkcaldy, to 18·7 in Clydebank, 21·3 in Falkirk, and 23·3 in Ayr.

The 705 deaths from all causes were 42 fewer than the number in the previous week, and included 126 which were referred to the principal epidemic diseases, against numbers declining from 148 to 120 in the four preceding weeks. Of these 126 deaths, 70 resulted from measles, 26 from whooping-cough, 14 from infantile diarrhœal diseases, 8 from diphtheria, 7 from scarlet fever, and 1 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 2·8, against 1·0 per 1000 in the large English towns. The deaths attributed to measles, which had been 89, 79, and 74 in the three preceding weeks, further fell to 70 last week, of which 57 occurred in Glasgow, 6 in Aberdeen, and 3 in Clydebank. The deaths referred to whooping-cough, which had been 19, 25, and 14 in the three preceding weeks, rose to 26 last week, and included 10 in Glasgow, 6 in Aberdeen, and 2 each in Edinburgh, Greenock, and Motherwell. The fatal cases of diarrnœa and enteritis (among infants under 2 years), which had been 17, 12, and 18 in the three preceding weeks, fell to 14 last week, and included 5 in Glasgow, 3 in Paisley, and 2 each in Edinburgh and Aberdeen. The deaths attributed to diphtheria, which had been 7, 4, and 7 in the three preceding weeks,, were 8 last week, and comprised 5 in Glasgow, 2 in Edinburgh, and 1 in Falkirk. The deaths referred to scarlet fever, which had been 5, 12, and 7 in the three preceding weeks, were again 7 last week, and included 3 each in Glasgow and Edinburgh, and 1 in Falkirk. The fatal case of enteric fever belonged to Glasgow.

The deaths referred to diseases of the respiratory system, which had been 93, 92, and 99 in the three preceding weeks, fell to 76 in the week under notice, but were 15 in excess of the number registered in the corresponding week of last year. The deaths from the several forms of violence numbered 27, against 21 and 38 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,212,380 persons at the middle of this year, 537 births and 309 deaths were registered during the week ended Saturday, July 10th. The annual rate of mortality in these towns, which had been 14·2, 14·8, and 16·6 per 1000 in the three preceding weeks, fell to 13·3 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 18·4, against corresponding rates of 15·1 and 18·1 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 15·9 in Dublin (against 11·5 in London and 17·2 in Glasgow), 10·0 in Belfast, 13·6 in Cork, 16·5 in Londonderry, 21·7 in Limerick, and 19·0 in Waterford, while in the 21 smaller towns the mean death-rate did not exceed 11·6 per 1000.

The 309 deaths from all causes were 78 fewer than the number in the previous week, and included 25 which were referred to the principal epidemic diseases, against 23 and 24 in the two preceding weeks. Of these 25 deaths, 8 resulted from infantile diarrhœal diseases, 7 from measles, 4 from scarlet fever, and 3 each from whooping-cough and diphtheria, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 1·1, against corresponding rates of 1·0 and 2·8 per 1000 in the English and Scotch towns respectively. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 7, 4, and 10 in the three preceding weeks, fell to 8 last week, of which 6 occurred in Dublin. The deaths referred to measles, which had been 6, 8, and 4 in the three preceding weeks, rose to 7 last week, and included 3 in Belfast and 2 in Dublin. The 4 fatal cases of scarlet fever, comprising 2 each in Belfast and Waterford, were slightly in excess of the average in the 13 weeks of last quarter. The deaths attributed to whooping-cough, which had been 6, 4, and 6 in the three preceding weeks, fell to 3 last week, and were all registered in Belfast. Of the 3 fatal cases of diphtheria, 2 occurred in Dublin and 1 in Cork.

The deaths referred to diseases of the respiratory system, which had been 57, 42, and 64 in the three preceding weeks, fell to 56 in the week under notice. Of the 309 deaths from all causes 110, or 36 per cent., occurred in public institutions, and 2 resulted from different forms of violence. The causes of 14, or 4·5 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes did not exceed 0·9 per cent.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiology held on July 1st, 2nd, and 5th 59 candidates presented themselves, of whom 40 were approved (including three ladies) and 19 were referred. The following are the names and medical schools of the successful candidates:—

Gerald Victor Wright Anderson, University College; Kaiku Ardeshir Anklesaria, L.M.S. Bombay, Bombay University and University College; Herbert Claude Apperly, Middlesex Hospital; Edgar Richard Batho, St. Mary's Hospital; John Churchill Blake, University College; Henry Walter Breese, Middlesex Hospital; Ricardo Calvo, St. Thomas's Hospital; Finlay Cameron, Charing Cross Hospital and King's College; George Wilfred Coombes, London Hospital; John Rudolph Cox, Guy's Hospital; Jane Crawford, London School of Medicine for Women; Leslie Perkins de Abrew, Ceylon Medical College and London Hospital; Hector Eugene Ekanayake, L.M.S. Ceylon, Ceylon Medical College and Middlesex Hospital; Francis Malcolm Timothy Flinan, Middlesex Hospital; Mendel Gourevitch, Paris and King's College; Thomas Cornelius Higgins, St. Bartholomew's Hospital; Mahommed Ibrahim, Middlesex Hospital; Ali Ismail, Cairo Medical School; Alfred Kenneth Ince Jones, Middlesex Hospital; David Joseph Heritage Jones, St. Mary's Hospital; Lilyan Lowenstein, London School of Medicine for Women; Kenneth McFadyean, University College; Thomas Hawks McLeod, King's College; Humphrey Ingilby Marriner, St. Thomas's Hospital; Frank Barwell Matthews, Middlesex Hospital; Palliyarallelage Don Jeronis Milanius, Ceylon Medical College; Harry Palmer, London Hospital; Christopher Stanley Parker, Charing Cross Hospital and King's College; Alfred Peine, Birmingham University; Percival Randall, Cardiff; Clifford George Jackson Rayner, St. Bartholomew's Hospital; Charles Cecil Rowland and Robert James Saunders, London Hospital; Ibrahim Shawkat, Cairo Medical School and King's College; Flora Singh, Calcutta Medical College and London School of Medicine for Women; Frank Hugo Stuttaford, St. Mary's Hospital; Charles Horne Warner, B.Sc. Lond., F.I.C., Middlesex Hospital; Graham Arthur Osborne White, Cardiff and Middlesex Hospital; Geoffrey Winter, Birmingham University; and Sik To Wong, Guy's Hospital.

At the quarterly examination in Practical Pharmacy held on July 8th the following candidates were approved:—

John Harrison Allan, Liverpool University; Eric Burn Andreae and William George Barnard, London Hospital; William Edward Barnes, University College Hospital; Kenneth Leslie Bates, Guy's Hospital; Lionel Moore Billingham, University College, Cardiff; Leslie Graham Blackmore, Middlesex Hospital; Eric John Swithin Bonnett, St. Thomas's Hospital; James Brooks, Manchester University; Walter Herbert Butcher, B.A. Oxon., Oxford University and St. Bartholomew's Hospital; Alfred Joseph Chiappa, Middlesex Hospital; William John Colborne, Charing Cross Hospital; Alfred Innis Cox, Middlesex Hospital; William Davies, University College, Cardiff; Theodore Henry Dobrashian, University College Hospital; Frank Swinburne Drewe, St. Thomas's Hospital; William Felix Eberli, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Basil Graves, B.A. Cantab., Cambridge University and Charing Cross Hospital; John Charles Neville Harris, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Maurice Lalor Hatch, St. Thomas's Hospital; Sydney Hazeldine, University College Hospital; Tom Robert Ernest Hillier, Middlesex Hospital; Anthony Bancroft Isaacs, St. Thomas's Hospital; John Jackson and Thomas James, St. Bartholomew's Hospital; Llewellyn Price Johns, King's College Hospital; Edgar Francis Job Jones, University College, Cardiff; Jeffrey Woodward Jones, B.Sc. Victoria, University College, Cardiff; Lloyd Kirwood Ledger and Paul Lindsey, St. Bartholomew's Hospital; Louisa Margaret Lister, Bristol University; Tudor David Llewelyn, University College, Cardiff; John Joseph Miles MacDonnell, St. Thomas's Hospital; George Boraston McMichael, St. Bartholomew's Hospital; Francis Keene Marriott, London Hospital; Walter

Harry Maudling, Charing Cross Hospital; John Stephen Moore, St. Thomas's Hospital; Ernest Cecil de Mallet Morgan, Guy's Hospital; Canapathy Pillai Nagamuttu, Ceylon Medical College and Middlesex Hospital; William Watson Newton, Birmingham University; Clement Nicory, St. Thomas's Hospital; Alfred Eric Parkes, St. Bartholomew's Hospital; John Peter, Middlesex Hospital; Ronald Rees Powell, B.A.Cantab., Cambridge University and St. Bartholomew's Hospital; Ralph Leslie Robinson, B.A.Oxon., University College Hospital; John Andrew Mackay Ross, St. Bartholomew's Hospital; Mian Mohammed Shaff, London Hospital; John Adrian Dudley Skinner, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Neville Hardcastle Smith, B.A. Cantab., Cambridge and Liverpool Universities; Ernest Algernon Sparks, St. Thomas's Hospital; Igbal Hosain Syed, Bombay University; Richard Roland Htoon Oo Tha, University College Hospital; Brian Whitehead, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Gladys Thurlow Williams, Henry William Miles Williams, and Peter Erbin Williams, B.Sc. Wales, University College, Cardiff; Walton Ronald Wilson, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Robert Wolff, B.Sc. Cape of Good Hope, Middlesex Hospital; Pelham Vansittart Wynn-Werninck, St. George's Hospital; and Claude Young, Middlesex Hospital.

UNIVERSITY OF MANCHESTER.—The following gentlemen have obtained the Diploma in Public Health:—

H. F. Hutchinson, E. M. de Jong, and O. M. de Jong.

UNIVERSITY OF BRISTOL.—Professor I. Walker Hall, professor of pathology, has been appointed director of the Public Health Laboratory during the absence of Dr. J. M. Fortescue-Brickdale, who has gone on active service.—At the Second Examination for the degrees of M.B., Ch.B., held recently, the following candidate satisfied the examiners: Daniel Gingell Cossham.

UNIVERSITY OF ABERDEEN.—The degree of Doctor of Medicine (M.D.) has been conferred upon the following gentlemen:—

Alexander Middleton Brown and Alexander Ferrier Angus Fairweather (Old Regulations).

At examinations held recently the following candidates were successful:—

BACHELOR OF MEDICINE (M.B.) AND BACHELOR OF SURGERY (CH.B.).

Crichton Alison, Alexander Main Baillie, Andrew Hunter Brown, *Frederick William Campbell Brown, *George Gordon Bruce, Robert Ferguson Copland, William Durward Cruickshank, *Robert Scott Cumming (John Murray medal and scholarship and second-class honours), Jamshed Khorshed Dastoor, *George Dewar, Harry Gordon Donald, Ian George Macdonald Firth, Elizabeth Gray, John William McKeggie, Alexander Louis Cameron Mackenzie, Alfred Scott Mackie, James Melvin, *John Gordon Smith Mennie, Thomas Menzies, Patrick George Milne, Robert Baird Milne, James Mitchell Mitchell, Frank Wesley Noble, John Taylor Scrogie, James Alexander Sellar, John Smith, Elizabeth Stephen, *Esther Stephen, Harry Forrest Stephen, Joseph Russell Tibbles, and William Charles Davidson Wilson.

* Passed Fourth Professional Examination with distinction.

TRINITY COLLEGE, DUBLIN: SCHOOL OF PHYSIC.—At examinations held recently the following candidates were successful:—

PRELIMINARY SCIENTIFIC MEDICAL EXAMINATION.

Botany and Zoology.—Joseph Cecil Gillespie, Joseph Eugene Deane Salman Louis Feldman, Eric Richard Murray, Frederick William Robertson, Cecil Emrys McQuade, Richard Counihan, James Sinclair Quinn, Charles John Shortt, William Roche Brereton-Barry, Henry James L. Murphy, James Alexander Smith, Noelle Long, Abgar Read Aidin, William Randolph Macnie, Richard William Shaw, John Cecil St. George Earl, John Charles Callanan, Richard Victor Dowse, Becher Fitzjames Haythornthwaite, Mayo Francis Meade, John Henry Brenell Crosbie, Falkland Litton Cary, Janie Millar Cummins, Gerald Fitzmaurice Keatinge, Robert Sturgeon Chapman, Thomas Donald Gordon, Richard Wood Power, Eric Wallace Harris, John Richard Waugh, William Joseph Hogan, Cecil Joseph Quinlan, Henry Patrick Stack, Nora Griffith, and George Robert Jordan.

Physics.—Eric Wallace Harris, Mayo Francis Meade, Cecil de Lisle Shortt, Jessie Gilbert, Victor George Walker, Samuel John Laverty, and John Desmond Watson.

Chemistry.—Thomas Russell Warren, Cecil Emrys McQuade, Joseph Cecil Gillespie, Frederick William Robertson, Gertrude Rice, Tom Madill, James Sinclair Quinn, Richard William Shaw, Johannes Tobias Mynhardt, William Swirles Allardyce, Henry Patrick Stack, John Henry Coolican, Gerald Fitzmaurice Keatinge, John Farnesworth Sheppard, John Dermot Watson, Patrick Joseph Duggan, Noelle Long, Abgar Read Aidin, Richard Dominick Murphy, Charles William Parr, Victor George Walker, Albert Hugh Thompson, John Henry Crosbie, Jessie Gilbert, Cecil Joseph Quinlan, Becher Fitzjames Haythornthwaite, Herbert Birney, Richard Counihan, and Richard Wood Power.

INTERMEDIATE MEDICAL EXAMINATION, PART I.

Anatomy and Physiology.—Harry Lee Parker, Victor Millington Synge, John William Scharff, Edward Francis Wilson, Frederick Gill, William Sweetnam, Lindley Albertyn, Johannes Cornelis Fouche, Eric William Deale, James Alexander Acheson, Robert M. Devereux, Percy Crowe Parr, Eric Stuart Mack, William Alfred Shannon, Margaret Wolfe, Leslie T. Nugent, Patrick Casey, Charles Going Ambrose, Eric Reginald Tivy, Pieter Johannes Swanepool, Ernest Edward Rollins, Mary Christina Sheppard, and Ethel Marjorie Luce.

INTERMEDIATE MEDICAL EXAMINATION, PART II.

Applied Anatomy and Applied Physiology.—Sidney Alfred Clark, Arthur Isaac Steyn, Thomas Edward Hill, William Frederick Wicht, Herbert James Wright, Harry Banks, David Shields Prentice, Fleetwood William Sullivan, Robert William Pritchard, William Garde-Brown, Gilbert Marshall, Millicent Hamilton-Johnston, Crosbie Weir, and Hastings Harley Molloy.

FINAL MEDICAL EXAMINATION, PART I.

Materia Medica, Pathology, Medical Jurisprudence, and Hygiene.—Alexander Richard Barlas, Thomas Lane, George William Shaw, Thomas Paul Chapman, Clement R. B Ramsay, Henry James Rice, Louis Blumberg, Charles Lewers McDonogh, Marie Annette Hadden, Edward Oswald Marks, Alan Glynn Wright, Frederick Joseph Smith, Eileen Gertrude Gwynn, Francis Aloysius McHugh (Medical Jurisprudence and Hygiene and Materia Medica), Francis William O'Connor (Pathology, completing examination), Henry S. Campion (Pathology, completing examination), Alfred Henry Price (Materia Medica and Pathology, completing examination), Edward Parker (Medical Jurisprudence and Hygiene, completing examination), Thomas William Sweetnam (Medical Jurisprudence and Hygiene, completing examination).

FINAL MEDICAL EXAMINATION, PART II.

Surgery (B.Ch.).—Christopher Charles Albertyn, Isaac Whitla Corkey, Edmund Duncan Tranchell Hayes, Sidney Walter Fisher, George Joughin, Evelyn Ross, Norman McConnell Boyce, Milo Ryan, Joseph Victor Cope, Cecil Francis Brady, Douglas Chetham Pim, Eric William Craig, Richard William Acheson, William James Dowling, Frederick Shaw, Richard Wellington Shegog, Andrew John Horne, Charles Devereux Pile, George Oliver Alley, Edwin Boyers, Maurice Bayliss King, and Arthur Hubert Watson.

Medicine (M.B.).—Eugene John McSwiney, Herbert McWilliams Daniel, George Joughin, Frederick Richard Shaw, Evelyn Ross, Edmund Duncan Tranchell Hayes, Godfrey Bateman, Charles Devereux Pile, Eric William Craig, William James Dowling, Andrew William Todd, Douglas Chetham Pim, Arthur Hubert Watson, Richard Wellington Shegog, Edward Gordon Fishe, Geoffrey Arthur Hoffman, George Oliver Alley, Andrew John Horne, Cecil McLaren West, George Stanton, Cecil Francis Brady, Richard William Acheson, and Sidney Walter Fisher.

Midwifery (B.A.O.).—Charles Devereux Pile, Esther Violet Adderley, Charles Henry Comerford, Edward Lipman, Arthur Hubert Watson, Thomas William Sweetnam, Mortimer McGee Russell, Cecil Guedale Sherowitz, and Roland Harris Graham.

Fitzpatrick Scholarship.—Edmund Duncan Tranchell Hayes and John Speares (equal).

DIPLOMA IN PUBLIC HEALTH.

Part I.: Bacteriology, Pathology, Chemistry, Physics, and Meteorology.—Archibald Louis Robinson and Patrick McGinnis.

Part II.: Sanitary Engineering, Vital Statistics, Public Health, and Hygiene and Epidemiology.—Walter Crane and Edward Harnett Patrick Murphy.

Final Dental Examination (B Dent.Sc.).—Frederick Charles Tucker.

Medical Scholarship, Anatomy and Physiology.—William Robert Fearon and Edward D'Arcy McCrea (Stewart Scholarship).

Banks Prize (Medicine).—Herbert McWilliam Daniel.

UNIVERSITY OF LONDON: KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.—The first election of scholars under the Burney Yeo bequest has been made as follows:—Mr. Meredith Blake Robson Swann, B.A., of Gonville and Caius College, Cambridge; and Mr. Edward ffolliott Creed, B.A., of Trinity College, Oxford.

UNIVERSITY OF EDINBURGH.—Instead of having two graduation ceremonials, a joint graduation ceremonial in Arts and Medicine was held on July 8th. Honorary degrees of Doctor of Divinity and Doctor of Law were also conferred. The ceremony took place as usual in the McEwan Hall, which was crowded to its utmost capacity.

CONVALESCENT HOMES ASSOCIATION.—The tenth annual report of this association dealing with the year 1914 states that the association now consists of three hospitals and 20 convalescent homes. The objects of the association are to coördinate the work of public convalescent homes receiving London convalescent patients and to obtain and disseminate information on the needs of London in respect of convalescent relief. From the funds of the association grants of money are made to some of the affiliated homes, and in the year 1914 £250 were thus distributed in cases where extraordinary expense had to be provided out of current income. The executive committee, of which Sir William S. Church is chairman, express the hope that a larger number of convalescent homes may become affiliated. The address of the association is 14, Victoria-street, London, S.W.

POOR-LAW MEDICAL OFFICERS ASSOCIATION OF ENGLAND AND WALES.—The annual general meeting was held in London on July 6th, at 429, Strand, W.C., in the council chamber of the British Medical Association, Surgeon-General G. J. H. Evatt being in the chair. The minutes of the last general meeting were read and confirmed. The report of the council was then put before the meeting, Dr. Major Greenwood, the honorary secretary, pointing out that their work had been a good deal increased by the war, which had

brought to notice many questions affecting the interests of Poor-law medical officers. Dr. Greenwood specially drew attention to the urgent necessity of all Poor-law medical officers giving their utmost assistance to the work of the Association. The report of the council and the treasurer's report having been unanimously approved, the election of officers was made for the ensuing year. Surgeon-General Evatt was unanimously re-elected President and Mr. D. B. Balding chairman of council. The honorary secretary drew attention to the long service of Mr. Balding, and pointed out how large a portion of his life he had devoted to the interests of the poor and their medical needs. In spite of the infirmities of age he was still able to come among them. Mr. Balding thanked the members for their recognition of his efforts to promote their welfare, and hoped that he might still be able to attend their council for a time. Dr. Major Greenwood was unanimously re-elected honorary secretary. Mr. A. A. Napper having resigned the office of treasurer, Mr. F. Greenwood, the solicitor to the Association, was elected to the position, a vote of thanks being unanimously passed to Mr. Napper. Mr. A. Withers Green was unanimously re-elected auditor. The following were elected members of council for 1915-16:—Mr. W. Holder, Hull; Mr. J. B. G. Gidley-Moore, Fyfield; Dr. Lloyd Brown, Eastbourne; Dr. A. Drury, Halifax; Mr. C. Biddle, Merthyr Tydfil; Mr. Withers Green, London; Mr. Napper, Cranleigh; Dr. C. Thackray Parsons, London; Dr. A. P. Agnew, Burnley; and Mr. G. Jackson, Plymouth.

CENTRAL COUNCIL FOR DISTRICT NURSING IN LONDON.—A meeting of the council will be held at the offices of the Local Government Board, Whitehall, London, S.W., at 11 A.M. on Tuesday, July 20th, when the matters to be discussed will be of considerable public interest at the present time in relation to child mortality. A report will be presented to the meeting on district nursing, with special reference to diseases which contribute very largely to the high death-rate of young children and for which no effectual provision has hitherto been made.

DONATIONS AND BEQUESTS.—Among a large number of charitable bequests the late Miss Elizabeth Browne, of Tunbridge Wells, left £500 to the General Hospital, Tunbridge Wells, and £100 to the London Hospital.—The late Rev. Alfred Guy Kingan L'Estrange has bequeathed £900 to the Seamen's Hospital Society, Greenwich.

THE King of Sweden has conferred the distinction of Knight Commander First Class of the Ancient Order of Wasa on Dr. Arvid L. Kellgren.

Dr. Frederick William Price has been elected a Fellow of the Royal Society of Edinburgh.

BOOKS ETC., RECEIVED.

BLAKISTON'S SONS, P., Philadelphia.
Cystoscopy and Urethroscopy for General Practitioners. By Bransford Lewis, B.S., M.D., F.A.C.S., and Ernest G. Mark, A.B., M.D., F.A.C.S. With a chapter by William F. Braasch, M.D. Price $4.50 net.

ELAND BROS., High-street, Exeter.
Voluntary Aid in Devon. Edited by W. Fothergill Robinson, M.A. Oxford.

GRIFFIN, CHARLES, AND CO., London.
Refuse Disposal. By Ernest R. Matthews, A.M.Inst.C.E. Price 6s. net.

KING, P. S., AND SON, London.
Guide to the Reports of the Royal Commission on Sewage Disposal. G. Bertram Kershaw. Price 5s. net.

LIBRAIRIE BAILLIÈRE, J. B., ET FILS, Paris.
Memento de massage, avec applications au traitément des blessures de guerre. Par le Dr. Somen. Price 1.50 francs.

MACMILLAN CO., THE, New York.
Making the Most of Life. By M. V. O'Shea and J. H. Kellogg. Price 3s. 6d.
Lessons and Experiments on Scientific Hygiene and Temperance for Elementary School Children. By Helen Coomber. Price 1s. net.

NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT, 4, Tavistock-square, London, W.C.
Mothercraft. Part II. An advanced course of lectures delivered under the auspices of the National Association for the Prevention of Infant Mortality at the Royal Society of Medicine, February to May, 1915. Price 3s. net.

OLIVER AND BOYD, Edinburgh.
Reports from the Laboratory of the Royal College of Physicians, Edinburgh. Edited by J. J. Graham Brown, M.D., and James Ritchie, M.D. Vol. XIII.

UNWIN, T. FISHER, London.
The Psychology of the Kaiser. By Morton Prince, LL.D. Price 2s. 6d. net.

Correspondence.

"Audi alteram partem."

THE DENTAL NEEDS OF THE ARMY.

To the Editor of THE LANCET.

SIR,—In the editorial paragraph under this heading in THE LANCET of July 3rd (p. 43) I read an invitation to ventilate the question of whether or not a Royal Army Dental Corps should be established, and although I am alive to the danger of trying to argue against the Editor, I will on this occasion take the risk of stating my opinion in favour of a Royal Army Dental Corps. Personal experience gained in last winter's work as a volunteer in Rouen convinced me that nearly all the medical officers of the Royal Army Medical Corps up to and including the rank of major are in favour of an Army Dental Corps, which would diminish their work enormously and relieve them from the unsatisfactory treatment by drugs of men who want teeth instead. The lieutenant-colonels and higher grades whose duties are chiefly administrative look at the matter differently, for the organisation of an Army Dental Service would throw an immense amount of work upon them, and they are quite aware that they have not the technical knowledge to establish the service or to control it subsequently. And when we come to the directorate of the Royal Army Medical Corps we know they must be overburdened with work at present, and it is quite natural that they should decline to add a vast new field to their responsibilities, even if they considered the subject to be within their ken. So driblets of dental surgeons are sent to France, where they are under the command of the local A.D.M.S., who can neither supervise, organise, nor control their work, and the position is most unsatisfactory.

The appointment of groups of dental surgeons to the depôts to attend the soldiers as recommended in THE LANCET is right as far as it goes, but who is to attend the men who are not in reach of the depôt? I maintain that London is the ultimate base from which complete dental departments should be established in all the depôts in France, small units should be provided at points on the way to the front, and individual dental surgeons should be sent forward just behind the trenches, and this system requires an Army Dental Corps. The formation of the unit suitable for the depôt is the chief administrative difficulty, and when I left Rouen I offered to establish a dental clinic of three or four dental surgeons at Wimereux at my own expense if the army authorities would ration them, but this offer was not accepted. I could not complain, for obviously this clinic was intended to illustrate what a dental unit should be. Time has rendered the experiment unnecessary, for I see by the current number of the *British Dental Journal* that Canada, having tried an Army Dental Service as an appendage of the Army Medical Service and found it unsatisfactory, has now established an independent Army Dental Service whose first attention will be given to overseas contingents. Let us hope that our own people will be able to follow in the wake of the Canadians.

I am, Sir, yours faithfully,

F. NEWLAND-PEDLEY, F.R.C.S., L.D.S. Eng

Samois, France, July 10th, 1915.

APPRENTICESHIP AND CONSCRIPTION.

To the Editor of THE LANCET.

SIR,—May I draw the attention of your readers to a pamphlet which I have written, entitled "Apprenticeship *v.* Conscription," which purports to show how we can save our youths, the future "English race," from growing up untrained, undisciplined, and often in consequence vicious and criminal. Any of your readers who care to write can obtain a copy free from Messrs. Stanbrook and Sons, Herne Bay.

Although written some years ago, the present time and the next year or two is the opportunity to be preparing for "after the war." Old conditions are changing, new ideas are developing, the land is being ploughed more deeply than ever before, and when the longed-for peace arrives and reconstruction begins some definite plan must be ready to our hand or we shall sink back to lack of method, and instead of progress the present wicked waste of our children and youths will be perpetuated.—I am, Sir, yours faithfully,

Herne Bay, July 12th, 1915. R. C. T. EVANS.

THE RIGHT-SIDED MURMURS OF MITRAL STENOSIS.

To the Editor of THE LANCET.

SIR,—In what he terms his "old-fashioned paper," which appears under the above title in THE LANCET of July 3rd, and for which no apology is necessary on account of its maintenance of a clinical method only too rarely seen of late, Sir James Goodhart, speaking with authority and from a ripe experience, refers to many points, both interesting and valuable, which will repay study. The comparative rarity of dextral valvular lesions not of congenital origin is of itself a matter of interest. Indeed, those who discussed the subject were at one time accused of entering upon a "region of romance." The quality of the blood and the nature of the circulation in the venous heart must be the factors which secure a comparative immunity of the adult right heart from valvular disease, and of these the nature of the circulation is probably the more important. For such non-congenital lesions as are met with in the right heart are chiefly due to infection, and the comparative frequency of congenital disease occurs at a time when the right heart is the chief driving power in the circulation. With the establishment of aerial respiration the right heart is relieved of much of its labour and the lungs themselves become an important factor in promoting the circulation through the venous heart, which loses, in proportion to this relief, both aspirative and propulsive power. I am glad to note Sir James Goodhart's reference to the aspirative power of the heart of which too little has been heard of late, but which, like many "old-fashioned" notions, because true and important, will probably soon be discussed again.

We may take it that the occurrence of a leak through the pulmonary arterial cusps in mitral stenosis is no longer doubtful although not common, for it requires powerful "back-pressure," to use another old and true but largely disused expression, to overcome the resistance of the undamaged pulmonary semilunar cusps. But we know that anatomically and physiologically some regurgitation through the tricuspid valve may be regarded as normal, and it is only when a degree of hypertrophy has enhanced the power of the right ventricle or when narrowing or rigidity has impaired the distensibility of the right atrio-ventricular orifice, that a tricuspid bruit becomes established.

It is in his discrimination of a tricuspid from a mitral systolic bruit in mitral stenosis that the chief clinical interest of Sir James Goodhart's paper consists. The tricuspid, like the pulmonary arterial area, but less so, lay long in the "region of romance," but the power of the right heart to generate a bruit of tricuspid regurgitation must be admitted. I have myself followed such a bruit from its genesis to its extinction. The case was one of sarcoma of the heart published in THE LANCET of Jan. 9th, 1909, in which the neoplasm first fixed the atrio-ventricular ring or a part of it, when a loud and rough systolic bruit as harsh as any mitral murmur was established and was traceable round the right chest, just as a loud mitral bruit may be to the left, and later, when the right ventricle became fixed by the disease, was altogether abolished, the patient living for a considerable length of time on her left heart alone.

In pointing out the silence and displacement of the mitral area in some cases of left atrio-ventricular stenosis and the occupation of the left præcordium by a systolic bruit of tricuspid origin Sir James Goodhart has done good service. If not altogether new, this is, as he remarks, "an old wine that a good many apparently have not had the pleasure of tasting." As he also states, it is important for therapeutic reasons. When such a bruit is established the aspiratory forces which assist the circulation through the venous heart are impaired. The pulmonary arterial circulation is impeded by the checked outflow of the pulmonary venous circulation and rendered still more tense by the exaggerated aspirative action of the lungs on the right-heart blood. The initial failure is in left-heart aspiration and propulsion and the vicious cycle established in pulmonary stasis, dextro-cardiac repletion, and impeded venous return.

As Withering remarked when writing of digitalis, it is more difficult to narrate the effects of a remedy than to describe a disease, but there has for long been an impression that the digitalis group has not fulfilled expectations in certain conditions of disease of the right heart and also in some phases of aortic regurgitant disease. There are no doubt many cases both of mitral stenosis and of aortic regurgitation which are saved by the bold use of digitalis. It would occupy too much space to deal with this matter fully here, but there are unquestionably other cases of both diseases in which digitalis is detrimental and in a manner not satisfactorily explained by the assumption of an idiosyncrasy on the part of the patient. The cases which Sir James Goodhart describes and which showed the quasi-mitral but really tricuspid murmur in mitral stenosis, were not moribund or even greatly distressed, for they lived for considerable periods after its detection. Although left-heart obstacle was steady in them, right-heart effort was well sustained. This is the delicate balance, in my opinion, which is apt to be easily upset by the unreflecting use of digitalis. The left heart of such a case is one in which there is not a capacious unemptied left ventricle, but an imperfectly filled one, and the action of digitalis has not, as it has appeared to me, had the effect of emptying a surplus of blood into the systemic arteries, but of diminishing the capacity of an imperfectly filled left ventricle and of impairing its aspirative power in diastole on the pulmonic circuit. It is, therefore, only in a certain phase

of mitral stenotic disease and its consequences that digitalis is detrimental, and on the clinical features of this phase Sir James Goodhart has cast valuable light by emphasising the points he has done in his interesting paper. What is true of mitral stenotic cases is likewise true of those cases of aortic regurgitation in which digitalis has been found to be prejudicial, and for the same reason—namely, increased aspiration of ventricular diastole in the presence of defect in the aortic cusps. In such cases there is little undue left ventricular repletion.

Sir James Goodhart's article contains other points of practical importance, and I feel sure that I am not alone among your readers in expressing the hope that your columns may contain more "old-fashioned" papers on these subjects of equal interest and value.—I am, Sir, yours faithfully,

Upper Berkeley-street, W., July 10th. ALEXANDER MORISON.

BOILED VACCINES.

To the Editor of THE LANCET.

SIR,—Dr. David Sommerville, in his letter under this heading in THE LANCET of July 10th, claims that boiled vaccines are more efficacious in infections with staphylococci and micrococcus catarrhalis than are vaccines prepared by being heated in the usual way to 58°–60° C., and that phagocytosis is distinctly more active as measured by the number of cocci englobed in a certain number of patients treated by him. Obviously the fallacy resulting from auto-inoculation cannot be excluded in these cases. The experimental inoculation of healthy rabbits avoids this fallacy, and I have investigated the effects of sterilising vaccines of staphylococci in various ways (including boiling) and carefully ascertained the opsonic index which resulted from the inoculation of similar doses into rabbits. My results are set forth in detail in a paper about to appear in the *Journal of Hygiene* and now in the hands of the editor of that journal. In the case of the boiled vaccine the opsonic index rose to 2·49, whilst in the case of the vaccine heated in the usual way to 60° C. it rose to 2·92. Although there is no very great difference in these results, the figures are slightly in favour of the vaccine heated to 60° C. Dr. Sommerville's claim of the *superiority* of boiled vaccines cannot, I think, be substantiated.

I am, Sir, yours faithfully,

FRANK E. TAYLOR, M.A., M.D., M.Sc., F.R.C.S.,
July 12th. Pathologist, Royal Westminster Ophthalmic Hospital.

THE INDEMNITY POLICY OF THE MEDICAL DEFENCE UNION.

To the Editor of THE LANCET.

SIR,—In the annual report of the London and Counties Medical Protection Society which has just been brought before my notice appears a statement to the effect that the indemnity policy which that society has entered into is superior to that of other similar societies in that the costs and damages are paid when an action is lost by the member either as a plaintiff or defendant. This condition of insurance is exactly similar to that which obtains in the Medical Defence Union indemnity policy, as a defensive action covered by the policy entered into by their members with the Yorkshire Insurance Company is interpreted to refer to the member either as plaintiff or defendant. It often happens that a member being libelled or slandered, a duty involves upon the Medical Defence Union to defend his professional repute by raising an action on his behalf, and if the member is insured in the Yorkshire Insurance Company the policy covers costs of the other side should a verdict adverse to him result.

Frequently the best method of defence is the institution of proceedings, and it is well recognised both by the Union and the "Yorkshire" that such proceedings constitute "defensive actions." I ask you to allow me to communicate with the profession through your columns, as being the quickest and best means of correcting any misunderstanding which may have arisen from the misleading statement in the annual report referred to above.

I am, Sir, yours faithfully,

A. G. BATEMAN,
General Secretary, Medical Defence Union.
4, Trafalgar square, W.C., July 12th, 1915.

A CORRECTION.

To the Editor of THE LANCET.

SIR,—With reference to my article on the Progress in the Treatment of Cataract in India recently published by you I wish you to insert this correction. The figures in the Bengal column for 1912 should have been not 2464 but 5679, and for 1913, instead of 1291, it should have been 5891.

I am, Sir, yours faithfully,

HENRY SMITH,
Amritsar, Punjab, June 23rd, 1915. Lieutenant-Colonel, I.M.S.

*** The figures were printed as given in Colonel Smith's manuscript.—ED. L.

THE MEDICAL DIRECTORY, 1916.

To the Editor of THE LANCET.

SIR,—The annual circular for the Medical Directory will be posted to the profession on July 19th. We sincerely hope that all practitioners will make their returns to us as quickly as possible, so that the issue for 1916 may be accurate and full of the latest information. The list of practitioners resident abroad will be reinstated.

We are, Sir, yours faithfully,

J. AND A. CHURCHILL.
7, Great Marlborough street, W., July 12th, 1915.

THE POSITION OF SURGEONS TO TRANSPORTS.

To the Editor of THE LANCET.

SIR,—In reply to the letter by "M." in your issue of June 26th, I can quite endorse his remarks on accommodation in many vessels of the Mercantile Marine. Having lately returned to England in a large liner carrying invalids, I found that the surgeon was herded with natives—men, women, and children—for some weeks, and afterwards surrounded by second- and third-class passengers, some of whom were not fit to associate with a respectable working man. When the surgeon spoke to the captain of the steamer about his quarters he was told that, of course, the company could not afford to spare a first-class cabin for him. Medical men intending to serve with the Mercantile Marine should be able now to make just arrangements as to pay and accommodation in the mercantile service, as I hear on good authority that the different companies find it hard to get good and trustworthy men. Unfortunately, there are still those who, through their own folly, cannot get work of any description, and these have to accept any position and bear any treatment. As they are on the Register of course they meet the requirements of the Act, but their number is now very small.

I am, Sir, yours faithfully,

July 1st, 1915. "DUALA."

The War.

THE CASUALTY LIST.

THE following names of medical men appear in the casualty lists published since our last issue:—

Killed: Captain J. Fitzgerald Gwynne, R.A.M.C., eldest son of the late Dr. C. Nelson Gwynne, of Sheffield.

Died of wounds: Lieutenant-Colonel W. B. Pritchard, R.A.M.C.(T.F.), 2nd East Lancashire Field Ambulance (T.F.) (reported wounded in our last issue).

Killed, following an accident: Lieutenant W. R. Pryn, R.A.M.C., eldest son of Deputy Surgeon-General W. W. Pryn, R.N.

Wounded: Lieutenant C. P. V. MacCormack, R.A.M.C.; Lieutenant H. J. M. Cursetjee, I.M.S.; Captain E. D. Gairdner (son of the late Sir W. T. Gairdner, M.D., K.C.B.), attached 5th Royal Scots Fusiliers (T.F.), and Lieutenant F. C. Bentz, 2nd East Lancashire Field Ambulance (T.F.), both of the R.A.M.C.(T.F.).

THE HONOURS LIST.

The *London Gazette* of July 8th publishes the following:—

The announcements in the *London Gazette* dated Feb. 18th and March 24th with reference to Captain A. G. Wilson are hereby cancelled, and following substituted:—

Appointed a Companion of the Distinguished Service Order—Captain Harry Theodore Wilson, Royal Army Medical Corps.

The previous announcement was published in the "Honours List" in our issue of Feb. 27th.

AN ADVISORY MEDICAL COMMITTEE IN THE DARDANELLES.

Colonel William Hunter, M.D. (assistant physician to Charing Cross Hospital), Lieutenant-Colonel G. S. Buchanan, M.D. (first assistant medical officer to the Local Government Board), Lieutenant-Colonel Andrew Balfour, C.M.G. (Director of the Wellcome Bureau of Scientific Research), and Lieutenant-Colonel Leonard Dudgeon, F.R.C.P. (lecturer on general and special pathology at St. Thomas's Hospital), are proceeding to the Dardanelles as an advisory committee to assist the Royal Army Medical Corps in dealing with any epidemic outbursts and any questions relating to sanitation and tropical diseases.

SIR JOHN FRENCH ON THE ARMY MEDICAL SERVICE.

It is gratifying to note that in his recent dispatch, dated June 15th and published in the *London Gazette* of July 10th, Sir John French has again occasion to commend the Medical Services in the field. He says:—

"I have much pleasure in again expressing my warm appreciation of the admirable manner in which all branches of the Medical Services now in the field, under the direction of Surgeon-General Sir Arthur Sloggett, have met and dealt with the many difficult situations resulting from the operations during the last two months.

"The medical units at the front were frequently exposed to the enemy's fire, and many casualties occurred amongst the officers of the regimental medical service. At all times the officers, non-commissioned officers and men, and nurses carried out their duties with fearless bravery and great devotion to the welfare of the sick and wounded.

"The evacuation of casualties from the front to the base and to England was expeditiously accomplished by the administrative medical staffs at the front and on the lines of communication. All ranks employed in units of evacuation and in base hospitals have shown the highest skill and untiring zeal and energy in alleviating the condition of those who passed through their hands.

"The whole organisation of the Medical Services reflects the highest credit on all concerned."

THE HIGH DEATH-RATE AMONG THE WOUNDED.

The fact, related in Parliament by Mr. Asquith, that the proportion of deaths among our wounded amounts to nearly 24 per cent. has naturally caused a painful impression. We have already pointed out that the percentage of deaths during the Crimean War was only 22, and this in spite of the appalling insanitary conditions which then prevailed. This proportion was reduced to 20 per cent. during the Boer War, but 44 years ago, during the Franco-Prussian War, the Germans lost only 17·53 per cent. of their wounded. The introduction of aseptic and antiseptic surgery and the great progress generally accomplished since then, made it only reasonable to expect an even greater saving of human life.

But in spite of the figures quoted by Mr. Asquith in the House, the anticipated improvement has taken place; given conditions similar to those that prevailed in 1870–71 we may confidently say that the percentage of deaths is less now than then. But conditions generally are utterly different to-day. The trench fighting results in a much larger number of injuries due to shells and shrapnel. Wounds from rifle bullets are comparatively rare, and when they do occur the body is so sheltered by the trenches that it is generally the head which is hit, and the probability of fatal results is consequently much greater. But by far the most terrible feature of the present war is the fact that in so many cases it is absolutely impossible to bring timely help to the wounded. The trenches face each other at very short distances. An attack is delivered, and the mass of the wounded fall on the unsheltered space between the trenches. When the struggle is over this space is carefully watched, and the slightest movement brings a volley from rifles or machine-guns. At night only, when favoured by darkness, some of the wounded may be able to crawl back to their trenches. It is the cruel fact that aid reaches the wounded very late, if at all, that accounts chiefly for the high death-rate. But that it seems useless to speak of humanity in relation to such an enemy, a truce surely might be acceptable to both sides. A respite for an hour or two could be agreed upon at a certain signal so as to remove the wounded. It has even been suggested that women dressed in some very conspicuous manner might be employed for this purpose, for there would be no possibility of mistaking their pacific purpose. If we could once more fight in the open, where the entire body, instead of merely the head, would be exposed; if the rifle bullet resumed its ascendancy; and if, further, it was possible to relieve all the wounded as soon as the battle was over, we should then doubtless find that the percentage of recoveries among the wounded was in keeping with what we are entitled to expect from the advance in surgical science. Especially will this be the case if operations can be performed and absolute rest and full treatment be given for a sufficient length of time close to the battlefield in

cases of abdominal and other wounds that are dangerously aggravated by travelling. This, we understand, is now actually done, though, perhaps, there is room for some improvement in the shape of more extensive accommodation near the front.

A greater number of portable tent hospitals will be required, particularly when the armies begin to move. Railway-head lines for ambulance trains may not be so conveniently near as at present. Certainly there is an extensive network of railways in the countries over which the armies now in Flanders are likely to move. But the army that retreats will naturally destroy the rails and blow up the bridges whenever possible, and there may even be a scarcity of houses remaining that might serve as temporary hospitals. Battles will probably be fought long before the lines of communication can be repaired. The present facilities for promptly disposing of the wounded by sending them to base hospitals cannot always be maintained. The trench warfare has lasted more than eight months. It will not go on for ever, and now is the time to prepare for the very different conditions that will prevail when we are once again able to carry out rapid movements. Tent hospitals that can be dismantled, packed in carts or railway trucks, conveyed in any direction and put up again in a few hours, are likely to be especially useful.

SOUTH AFRICA AND MEDICAL ASSISTANCE TO THE EMPIRE.

The Union Government of South Africa has offered to do everything possible to meet any request from the Imperial Government for the formation of various units, particularly medical, as part of an Imperial Service Contingent, when the Imperial Government intimates its wishes.

AFTER THE WAR: THE FUTURE OF THE INCOMPLETELY RECOVERED WOUNDED SOLDIER.

Sir Thomas Oliver, visiting physician to the Northumberland War Hospital, Newcastle-upon-Tyne; Honorary Colonel 20th Battalion Northumberland Fusiliers (Tyneside Scottish), writes as follows:—

"As a nation we must look ahead. That we shall come out of the war victorious is more than the expression of a hope. Many of the wounded soldiers from the front arriving in this country recover and are drafted back; others are maimed for life. Some of these have given a limb, part of a limb, or an eye for their country. What is the country going to do for them? Germany has already opened a school for the instruction in writing of those who have lost their right hand or arm. Something on a highly organised scale ought to be undertaken in our own country and at once. Unless this is done *now* there will be a plethora of human wrecks which no Government Department will be capable of readily coping with. There will be also to many men loss of time and opportunity, and with this the postponement of a life of activity in the future. In the interest of our soldiers and from an economic point of view it is advisable that steps should be immediately taken to arrange courses of systematic and practical education for men whose wounds received in war have left them physically unable to resume their former occupation. A great country like ours should not have to wait for other countries to set an example or to lead the way in this matter. Our legislature passes laws and grants awards as compensation to men and women for injuries received when at work, but it makes no attempt to assist the disabled to qualify themselves for other work for which they are capable. The individual is left to struggle on as best he can, but in this war we cannot stand aside and ignore our indebtedness to men who, with or without families, renounced position and good salaries in order to save their country, and who, having become crippled in consequence, see only qualified poverty staring them in the face. The war has changed State obligations and personal relations. Apart from the economic aspects of the question, gratitude for services rendered must show itself in a practical manner towards our wounded. Although Germany, with her complete organisation and that foresight whereby she anticipates events, has already established a system of institutional re-education whereby the arts, commerce, and certain industrial occupations will not become closed avenues to her wounded soldiers, she is not the first country to have inaugurated schools for the theoretical and practical instruction of men injured in the field of industry or in war. As far back as 1903 a French physician, Bourillon, drew attention to schemes arranged in Denmark, Sweden, and Norway for providing assistance to those who had become maimed while following their occupation. To Pastor Hans Knudsen belongs the honour of having inaugurated the Copenhagen Fund. Bourillon, after having studied the operation of the fund in Gothenburg, Stockholm, and Christiania, tried to establish a similar fund in France in connexion with the law of April 9th, 1898, which deals with accidents to workmen. This subject has been recently dealt with and at length by Dr. E. Mosny, Paris.[1] In 1898 an apprentice school was opened at Charleroi, in Belgium, for persons who had been crippled by accidents received when at work. There is a large percentage of persons in war or in occupation who recover sufficiently to undertake work of one kind or another. War is of all occupations the most hazardous. So far as the re-education of wounded soldiers is concerned, probably the best results are to be obtained by sending the men not into large factories but into school workshops reserved exclusively for the wounded. The establishment of such institutions ought not to be left to voluntary enterprise; it is clearly a State duty. In these institutions, which ought to be established in large military centres, the better-educated men could be trained in commercial methods; some men could take up tailoring, shoemaking, and other trades, while other men again might be prepared for such outdoor occupations as floriculture. In many of the Government offices the soldiers who have recovered could act as messengers and caretakers of buildings. The Mayor of Lyons, touched by the pressing circumstances of the times, succeeded in December last in persuading his colleagues to allow to be transformed some of the city landed property into a technical school and workshop. Into this institution crippled soldiers only are admitted who are found to be physically and intellectually capable of being re-educated for work, men who have given indications of being really wishful to be trained. Were a similar scheme adopted for this country, each man ought to be given a certain amount of

[1] Annales d'Hygiène Publique et de Médecine Légale, Juin, 915, p. 317.

choice as regards a trade, and if after a trial it is found that he is incapable of proceeding with the particular trade, he might be given at least one other opportunity, care always being taken by those in office to suggest to the men such occupations as would best harmonise with their physical defects. In many large factories at the present time managers, to my knowledge, rather than offer work which could quite well be done by men who have been crippled in their employment, prefer to pay full compensation, and even a little extra, to get rid of the disabled workman altogether. Although such occupations as tailoring, wood-carving, and shoe-making can, comparatively speaking, be easily learned, for those soldiers who have been better educated there should be courses of instruction in book-keeping, languages, shorthand, and typewriting.

"The demands of the war have given chances to, and created opportunities for, women. Experience has shown that for some work women are as well adapted as men. It will be difficult to oust some of the women from their positions after the war. This invasion by women of fields of labour hitherto held by men may have farther-reaching consequences than we can at present foresee. Should schools of instruction be established in this country the hope is expressed that, as a result of experience and military discipline, the men would be loyal to their masters and to their instructors. In order to secure the establishment of such friendly relations between the men and their instructors the Government would have to exercise the greatest care in choosing their officials. These should be men well trained and of a kindly disposition, men who by their disposition and knowledge would guide and lead their pupils rather than attempt to drive them. The institutions would have to be run on ordinary business lines of an eight hours' day, and no soldier would be allowed to work until his defect or deformity had become definitely settled, so that his capability for work could be clearly gauged. Men obliged to wear physical apparatus—e.g., an artificial limb—would require to be in possession of such before entering a school workshop. The object of the re-education would be to find out what each man might become capable of doing, also to provide for him some employment whereby income could be added to without curtailing the pension to which his military service entitled him. Naturally preference would be given to soldiers whose deformities did not forbid of them undertaking work. Men with dependents would have a prior claim to those without such. What I plead for is that the Government should establish institutions such as I have depicted, so that no time might be lost in getting into work those men who, while they have recovered from their wounds, are yet physically disqualified from undertaking their previous occupation. It will be a national calamity and a great loss to the producing capacity of this country if some such steps are not taken, for otherwise the men will drift into irregular habits and thereby will be perpetuated some of the worst consequences of the war. At present there are many men home from the front who, although they have lost a limb or part of a limb, are yet capable of undertaking fresh work if they could be educated for it. Many of them, for example, could assist in increasing the output of the munitions of war if they could only receive some practical instruction in a Government school workshop or in a small factory. In Belgium, years before the war began, the school workshops established by the Government were a great success in regard to both the nation and the men who had been injured while following their occupation. The establishment of school workshops on a barrack system, and in which single men could be also housed and fed, perhaps hardly appeals to British taste, but to men who have been soldiers no objection would be likely to come from them. In such institutions there would require to be a combination of military and industrial discipline. The training might last for periods from six months to a year or more, according to the nature of the trade, the physical fitness, and aptitude of the individual. Schools for the study of agriculture might also be opened and gardening taught. Fowl-raising and bee-keeping are not unprofitable employments. The cry of some reformers is back to the land. By the scheme just proposed the village life of our country would be intensified, and local industries given a fresh impetus and a new lease. As already stated, the nation, as a whole, has a duty to discharge to those wounded men who have returned from the front. In days to come when the excitement of the war shall have subsided, and the stories of glorious deeds done on the battlefield shall have become part of British history, we, as a people, faced by the grim realities of the war in the form of crippled soldiers in our midst, shall be obliged to show our gratitude to, and our practical sympathy with, those men who at a time of their country's need did their little bit to save her and us while they themselves incurred the risk of losing their all."

METALLIC HEAD-PIECES IN THE TRENCHES.

For some time there have been distributed to the troops at certain points in the French lines metallic head-pieces, and one of our correspondents with the French army has already called attention to their employment and to the prevention that has followed their use of a certain number of head wounds so fatal in the trenches. Dr. Devraigne has now systematically studied the value of these *calottes métalliques*, and has found it to be considerable. In 55 cases of head injury 42 of the wounded had no head-piece. Of these 42, 23 sustained fracture of the skull, and the greater number of them eventually succumbed, the remaining 19 being scalp wounds. In the 13 cases of head wound among those wearing the head-piece 8 were suffering from cerebral shock, more or less severe, but no deaths followed, while 5 had sustained merely superficial wounds or scratches. Other soldiers similarly protected had received no visible head wound at all. These figures do not, of course, prove that the *calotte* is an absolute safeguard against fractures of the skull by bullet wound or shell wound in the trenches, but, as a matter of fact, in the series of cases studied there was not a single fracture of the skull among the protected men, and Dr. Devraigne concludes that the value of the metallic head-piece has been absolutely demonstrated and that it should be much more generally employed.

MOTOR TRANSPORT FOR THE WOUNDED.—Surgeon-General Sir Pardey Lukis, chairman of the Executive Committee, St. John Ambulance Association in India, in a public appeal, said that not least of the achievements of the St. John Ambulance and the British Red Cross Society has been the provision of a very large number of motor ambulances. The St. John Ambulance Association in India has furnished four such ambulances, now actually serving. An effort is now

being made to provide a fleet of these ambulances, one of which has been already presented by the Rani of Bijri for service in one or other of the theatres of war. The Indian Council has already provided two motor launches for service in the Persian Gulf, and more vessels of this kind may be required. The Council appeals for help in carrying out this new and very important extension of its work. Contributions for motor ambulances and motor boats should be sent, specially earmarked, to the honorary treasurer, St. John Ambulance Red Cross War Fund, Alliance Bank, Simla.

THE BALTIC AND CORN EXCHANGE HOSPITAL.—This hospital unit, composed of R.A.M.C., St. John Ambulance, and British Red Cross Society's personnel, was sent out to the Belgian Army on Oct. 25th, 1914. It is housed in two floors of the École Sophie Berthelot, with a total accommodation of 105 beds. During its first six months the hospital acted as a stationary surgical hospital at the advance base, and for three months accepted only those cases that were not fit to be transported any further. The statistical report of the hospital for the six months ending April 24th, 1915, has now been issued by Dr. L. J. Picton, of the St. John Ambulance, registrar to the hospital. The total admissions were 1098, while many thousands of patients were treated in this clearing hospital whose records are not included. An interesting point is the statistics of typhoid fever cases treated between Nov. 26th, 1914, and March 31st, 1915. The total number of cases was 69, of whom 55 were cured and 14 died. Of the 69, 25 were vaccinated against typhoid fever with 22 recoveries and 3 deaths, while 44 were unvaccinated, with 33 recoveries and 11 deaths, thus showing double the mortality rate. Moreover, two of the three vaccinated patients who died had received only one injection and one only two injections. None of those fully protected died. The report includes two articles on the removal of foreign bodies under the X rays, by Lieutenant J. R. Caldwell, R.A.M.C. (S.R.), published in our columns of April 24th and May 15th.

THE WASTE OF FOOD-SUPPLIES AT THE FRONT.—A business man serving at the front, writing in reference to the great wastage of food-supplies, makes the sensible suggestion that the Army Service Corps wagons, which in accordance with orders now return empty after delivering supplies (to their efficiency in which service he pays a high tribute) should be instructed to take back all the unused foodstuffs to the railhead, where a "dumping" officer and his staff could re-sort it, reject the unfit and damaged, and reissue the sound rations.

RUSSIAN WOUNDED AND MEDICAL OFFICERS BURNT ALIVE.—The report of the war correspondent of the *Novoe Vremya* from the Galician front, as quoted in the *Times* of July 7th, should be recorded as widely as possible, if only that a refutation may, if possible, be elicited. The Russian journalist says:—"For some time persistent rumours circulated here which seemed to me incredible, so terrible they were. Now I hear on all hands that those rumours are true, and that an authentic report has been sent up to Petrograd. We brought with us a large number of infectious cases from the Carpathian Mountains and left them temporarily in a Jesuit college at Chyrow. They fell into the hands of the Germans, who removed them to an isolated wooden barrack, together with their medical attendants, shut all the windows and doors, poured paraffin over the building, and fired it. More than a hundred were thus burned alive. The Germans do not deny this fact. I have the authority of a number of our officers, who have seen proclamations thrown over our positions by German aeroplanes, in which they point out that they were forced to resort to that cruelty by stern necessity—in order not to carry infection into their army and also to teach the Russians not to leave their sick and wounded behind them, thus burdening the German medical staff. The proclamation expresses the hope that the Russians will learn from the lesson."

THE Joint Committee of the Order of St. John and the British Red Cross Society, which is affording valuable help to the French on the continent, wishes it to be known that its work is being carried on through the Anglo-French Committee and the French Red Cross, with the sanction of the French Ambassador in London.

DEPÔT HOSPITALS IN INDIA.—The military authorities desire to provide special equipment for a number of hospitals at the depôts in India of those Indian regiments which are in the various forces at the front, and whose sick and wounded return to these depôt hospitals either directly from Bombay or through selected hospitals, civil and military. The St. John Ambulance Association has already given assistance in the extra equipment of the military war hospitals, and is now asked to assist the depôt hospitals with additional articles. The association is also making a special grant of Rs. 5 per bed.

RELAXATION OF RECRUITING RULES.—The War Office has instructed the recruiting authorities in Birmingham that men who have been rejected for slight causes, such as defective teeth, weak eyesight, or minor physical faults, are to be invited to submit themselves for re-examination, and that in future no man who is organically sound is to be refused. Those not up to the standard for an active service battalion are to be placed in units for home defence or garrison duty, thus releasing adequately fit men for active service.

WOUNDED ALLIES RELIEF COMMITTEE.—Mr. T. P. O'Connor, M.P., will address the audience at the concert to be given in aid of the funds of the Wounded Allies Relief Committee (Sardinia House, Kingsway), and under the auspices of the National Sunday League, at the Palladium on Sunday evening, July 18th. Tickets, 1*s.* to 7*s.* 6*d.*, are obtainable from the National Sunday League's offices, 34, Red Lion Square, High Holborn.

WOODSIDE RED CROSS HOSPITAL, GLASGOW.—An auxiliary hospital of the Scottish branch of the Red Cross Society was opened on June 29th by Lord Provost Dunlop in the new buildings of the Glasgow College of Domestic Science, Sir George Beatson, chairman of the Scottish branch of the Red Cross, presiding. The hospital provides accommodation for 300 patients, and is so admirably suited for its purpose that the Lord Provost considered it hard to believe that the architect had not originally planned it with that object in view.

THE ALLIED FORCES BASE HOSPITAL AT ÉTAPLES.—A concert in aid of this hospital has been arranged to take place on July 23rd at His Majesty's Theatre, under the patronage of Queen Alexandra.

THE CANADIAN SICK AND WOUNDED.—A Hospital Commission, with Senator Lougheed, Acting Minister of Militia, as president, has been appointed by the Canadian Government to incur all necessary expenses for the care and return of the Canadian sick and wounded soldiers.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Notification of Births (Extension) Bill.

THE House of Commons has given a third reading to the Notification of Births (Extension) Bill. Some alterations have been made in the Bill, particularly in Clause 2. Some fears were expressed on the second reading that that clause as originally drafted might be prejudicial to the admittedly beneficent health work being accomplished by the educational authorities. Mr. LONG, the President of the Local Government Board, brought forward amendments to allay those apprehensions.

Clause 2 as amended reads: "Any local authority within the meaning of the principal Act (whether a sanitary authority or not) may, for the purpose of the care of expectant mothers, nursing mothers, and young children, exercise any powers which a sanitary authority has under the Public Health Acts, 1875 to 1907, or the Public Health (London) Act, 1891, as the case requires. (2) Any expenses incurred in the exercise of these powers shall be defrayed in the same manner as expenses of the local authority are defrayed under the principal Act. (3) Any such powers may be exercised in such manner as the authority may direct by a committee which shall include women and may comprise, if it is thought fit, persons who are not members of the authority. Any such committee may be empowered by the authority by which it is appointed to incur expenses up to a limit for the time being fixed by the authority, and, if so empowered, shall report any expenditure by them to the

authority in such manner and at such times as the authority may direct. A committee appointed for the purposes of this section shall hold office for such period not exceeding three years as the authority by which it is appointed may determine."

The National Registration Bill.

The National Registration Bill now only awaits the Royal Assent.

General Board of Control for Scotland.

The first annual report of the General Board of Control for Scotland has been issued as a Parliamentary Blue Book.

The Pay in the Royal Army Medical Corps.

Last week in Parliament Sir J. D. REES asked the Financial Secretary to the War Office whether the pay of a junior temporary lieutenant in the Royal Army Medical Corps was £100 per year more than the pay of a captain in the Royal Army Medical Corps of the Territorial Forces, although the former might be and usually was absolutely new to military duties, and the latter might be and often is of ten years' standing as a commissioned officer in the Territorial Royal Army Medical Corps; and, if so, when would this inequality be rectified. Mr. H. FORSTER has replied in a written answer that the pay of a medical officer serving under special contract with the temporary rank of lieutenant was greater than the pay and allowances drawn by a captain in the Royal Army Medical Corps, whether Regular or Territorial, though not to the amount stated. He added, however, that proposals are under consideration which may affect the comparison, information which will be very welcome to many of our readers. The anomalies of pay for medical service with the navy and army have been brought about by the circumstances in which commissions have been given. There is now a widespread feeling that the disorder should be smoothed out.

HOUSE OF COMMONS.

WEDNESDAY, JULY 7TH.

Hospital Ship Service in the Dardanelles.

Mr. JOYNSON-HICKS asked the Under Secretary for War how many hospital ships were now engaged in the service between Alexandria and England, and the dates of their first voyages.—Mr. TENNANT replied: Seven army and three naval hospital ships are now employed between the Dardanelles, Alexandria, and the United Kingdom. The first voyages of four of these were in January and February, of four more in April and May, and of the remainder in June. There are also three ships employed on what is called the ferry service. This has been in operation since May.

THURSDAY, JULY 8TH.

Hospital Accommodation in Egypt.

Sir A. B. MARKHAM asked the Under Secretary of State for War whether the Secretary of State for War refused to give his consent to private persons sending out to Egypt private hospitals at their own expense; and whether, as a consequence, when the wounded from the Dardanelles arrived at Alexandria they were sent to the German hospital to be nursed by German nurses.—Mr. TENNANT replied: Private hospitals were not and are not required in Egypt. The arrangements for the reception of the wounded at Alexandria have been adequate in all respects. I think that the General Officer Commanding in Egypt exercised a wise judgment in making use of the German hospital; in fact, he would no doubt have been criticised adversely in this House and outside if he had failed to make use of all the suitable accommodation which was at his disposal.

Notification of Births (Extension) Bill.

Mr. LONG (President of the Local Government Board) moved the second reading of the Notification of Births (Extension) Bill. He said this Bill is not a war emergency Bill, but it is to amend ordinary legislation, which is as necessary as ever in the midst of a great war. There are certain powers under an Act of 1907 dealing with the notification of births. It is a permissive Act and the local authorities have adopted it to a great extent so that something like 80 per cent of the population of this country come under its powers. The present Bill proposes to extend those powers, to make the Act universal throughout the country and to effect certain other changes. The Notification Act necessitates the notification of births of children alive or stillborn. We propose by this Bill to pave the way for doing something to improve the health of mothers and young children. All experience of the areas where this Act has been in force goes to show that if notification is followed up by a wise action on the part of local authorities or voluntary agencies, satisfactory consequences follow for mother and child. Although not a war measure, at no time in our history has it been ever more desirable that we should do everything to assist mothers or promote the health of infants so that they may become healthy men and women. If the House will give a second reading to this Bill the effect will be one on which it will be able to congratulate itself. Clause 2, which deals with one branch of the subject, has not as it stands in the Bill proved satisfactory to our education authorities, either central or local, and I have already arranged with the President of the Board of Education for amendments which I think will meet the point raised by the honourable Member for North Somerset (Mr. King). I hope the result will be satisfactory.

It should be mentioned that Clause 2, to which Mr. LONG made reference, was in the following terms: "Any local authority within the meaning of the principal Act (including in any county district both the council of the county and the council of the district) may make such arrangements as they think fit, and as may be sanctioned by the Local Government Board for attending to the health of expectant mothers and nursing mothers, and of children under five years of age who are not being educated in public elementary schools; and any expenses incurred in carrying out those arrangements shall be defrayed in the same manner as expenses of the local authority are defrayed under the principal Act. Provision may be made, as part of any such arrangements, that the arrangements may be carried out in such manner as the authority direct by a committee comprising, if it is thought fit, persons who are not members of the authority."

Mr. J. A. PEASE welcomed the Bill. The statistics, he said, showed an enormous variation between one district and another, but in the last few years the rate had decreased from an average of about 130 to 108, showing what could be done by paying attention to the subject. He wished to be assured that the work undertaken by the Board of Education in connexion with infant welfare would not be interfered with by any provisions which might be put into operation by this Bill. He hoped that the excellent work which had been going on under the Board of Education in connexion with schools for mothers, nursery schools, crèches, and other arrangements for dealing with children under the age of five would not be handed over to the sanitary authorities. It was essential that children should be attended to before they came into the school and not merely after they came to school. Maternity cases and pre-natal cases, whilst they are being nursed, were matters obviously suited to the Local Government Board. The Board of Education, however, had already over 150 schools for mothers in the country, over 80 day nurses, 300 clinics, more than 3000 classes in which housecraft, hygiene, and infant management had been taught to girls in schools and 1200 classes established in connexion with school life. There were 1200 school medical officers, of whom 93 were women, and inspectors, nurses, and medical men visited the homes of the parents. It seemed to him obvious that this work should not be handed over to the sanitary authorities.

Mr. GOLDSTONE cordially associated himself with the sentiments of Mr. Pease on keeping the matters which that right honourable gentleman had mentioned within the province of the Board of Education.

Mr. PERCY HARRIS was glad that the Act was to be extended and additional powers given for the care of mothers and young children. He pointed out that the adoption of the Act in various districts had not always been followed by effective action. The Bill now removed any doubt as to the powers of the local authorities, and showed what had been done already by public and private agencies. He hoped that the experience of voluntary societies would be utilised and their work encouraged.

Mr. DICKINSON approved of the Bill and asked how far local authorities could depend upon the central funds to carry out the work suggested in it.

Mr. CURRIE said that he was glad that this very welcome Bill had been made to apply to Scotland, and asked for some assurance in general terms as to the provision of money in Scotland for the actual working.

Mr. LONG, replying to the debate, said that with regard to the grants-in-aid which were to be paid in respect of Scotland and Ireland, there was a rule that whenever grants were made in respect of legislation originated in England but applied to Scotland and Ireland, the distribution of the grants was made in due proportion to the three countries. That would be done in this case.

Mr. C. E. PRICE: We were unfortunate when the original Act was passed, in that we got no grant in Scotland.

Mr. LONG: I am quite aware of that, but this year the Treasury has made a special grant—an increased grant—to meet the expenses of the Act, and I understood that the Scottish Office is in communication with the Treasury. No answer has yet been received, but the Secretary for Scotland is giving close attention to the matter.

Sir JOHN SPEAR asked whether the grant-in-aid would cover the whole expense of the Bill.

Mr. LONG: No, not the whole expense, but there will be a grant-in-aid. The greater number of local authorities had adopted the Act, and what the Government were doing now was to give them an increased subvention.

The Bill was then read a second time.

MONDAY, JULY 12TH.

National Health Insurance.

Speaking on the vote for salaries and expenses of the National Health Insurance Commission in Committee of Supply,

Mr. CHARLES ROBERTS (who represents the Commission in the House of Commons) said that the ultimate effect of the war upon the finances and position of the Approved Societies would have to be considered when more information was available. A number of duties during the war had been undertaken by the Insurance Commission which were strictly outside its purview. In collaboration with the War Office, for instance, the Commissioners secured medical attendance for soldiers on furlough, and soldiers living at home or in billets, and had made known the arrangements amongst the Insurance Committees. He might also mention the generous offer made by the medical profession and the chemists to treat the dependents of soldiers serving with the forces. That was a very generous act on behalf of the two professions which deserved all due recognition. Then the Commissioners had been concerned with cases of soldiers suffering from tuberculosis, and they had arranged with the War Office that soldiers, when they were discharged afflicted with this disease, should vacate their beds in the military hospitals and without any interval should undergo treatment in residential institutions, so that there should be no gap between their discharge from a military hospital and admission to a sanatorium. The Insurance Committees had helped with this scheme with great alacrity and grants of £10 per head had been made out of the grant sanctioned last year by Parliament. A considerable number of soldiers had already been benefited by that arrangement. He mentioned that Belgians as foreigners were not liable to come under the Insurance Act. They were allowed in consequence to claim the exemption which was due to them if they were ordinarily dependent on some occupation or work in Belgium. In the case of foreigners the employer paid his contribution, though the employee did not, and the 3*d.* weekly that the employer paid went to provide in the case of the Belgians medical and sanatorium benefits. There was one case of a munitions works where a large number of Belgians were being employed and there it was desirable to provide them after a very short waiting interval with medical treatment. In those cases special arrangements had been made that after a month they were to be entitled to medical treatment. Special medical cards were being prepared in those cases which could be presented to any doctor on the panel and they were to be renewed every three months. There were two other points which he wished briefly to mention. One of the first difficulties with which the Commissioners had to deal on the outbreak of war was the rapid rise in the price of certain drugs which were normally prescribed. In their case the Treasury allowed a special grant, and the prices in respect of these drugs were being fixed monthly by agreement between the British Medical Association and the Pharmaceutical Society, with the approval of the Insurance Commissioners. There was another point which would interest honourable Members. In this case really substantial assistance had been given. Under the principal Act one penny per annum per insured person was taken from the Insurance Fund to carry on schemes of medical research. The Medical Research Committee was set up with an income of £56,500 a year. It was staffed with some very distinguished men of science, and before the war broke out they were engaged in the prosecution of a number of schemes of medical research. When the war broke out the whole staff was handed over to the War Office for service in connexion with the war. Their buildings had been turned into a hospital. The staff were engaged in compiling medical statistics, statistics of casualties, and so on. They were taking preventive notes against the spread of disease and in reference to improved sanitation. Some details of their work had been embodied in a White Paper which had been presented to the House. He thought that no single penny had been better spent by any one of the 14,000,000 insured persons during the year than this particular penny which they had contributed for the purposes of medical research. The Insurance Commission was very conscious of the strain which the war had thrown upon the Approved Societies. Economy had been enjoined all round by critics. The net reduction in the vote for the Joint Committee was £495,000. That was due, he was afraid, to war economies. There was postponement of various schemes of development which would have been undertaken but for the war. For instance, there was a grant for the institution of medical referees and for extra provision for nursing. These schemes had been held up pending the return of peace. Administration could not be cut down beyond a certain point without sacrificing efficiency.

Mr. WARDLE said that in many places stock medicines were being used for insured persons. He hoped that the question would be looked into.

Mr. CHARLES ROBERTS replied that the question of stock medicines would be looked into. The insured person was entitled to proper and thoroughly efficient treatment.

The vote was agreed to.

Medical Certification in Ireland.

On the vote for the National Health Insurance Commission (Ireland),

Sir FREDERICK BANBURY called attention to the fact that the vote for medical certification and medical grants was £100. Last year the amount was £97,100. What, he asked, was the cause of the decrease?

Mr. BOOTH said that it did not follow because the larger sum had been voted last year it had been spent. In Ireland there was no medical benefit as there was in Great Britain. This system of medical certification was a sort of adaptation of the system prevailing here to Ireland with the omission of medical benefit.

Mr. CHARLES ROBERTS said that the money voted last year was still in hand. When the war allowed it the Commissioners would be able to deal with the matter freely without imposing a strain upon the medical profession.

The vote was agreed to.

TUESDAY, JULY 13TH.

Payments to London Panel Practitioners.

Sir PHILIP MAGNUS asked the representative of the National Insurance Commissioners to say when the balance of the original sum of money, representing the premiums of those insured persons who had neglected to choose a doctor, which was in the hands of the London Insurance Committee and amounted to about £13,000, would be divided among the doctors on the London panel in accordance with an arrangement made in 1913 with the then Chancellor of the Exchequer.—Mr. CHARLES ROBERTS replied: Final payments to doctors on the panel in London in respect of the period in question are now being made.

Hospitals and the Spirit Duty.

Sir PHILIP MAGNUS asked the Chancellor of the Exchequer whether, having regard to the disappointment that would be caused if no relief from spirit duty was provided for hospitals in the course of the present financial year, it was his intention to introduce a clause into this or the next Finance Bill to give such relief in the form of a grant which would be based on the duty paid on spirits by hospitals last year, subject to investigation of an Advisory Committee working in connexion with the Board of Customs and Excise.—Mr. MCKENNA replied: I agree in principle to a grant from public funds of the kind referred to in the question. I understand that this proposal meets with general approval, and regret that time will not allow me to deal with the matter now. I propose, however, to do so on the first suitable occasion.

In the course of the discussion of the Finance Bill on report,

Sir HENRY CRAIK said that he had placed on the notice paper a clause to obtain a relaxation of the duty in the case of spirits used in hospitals. He would not move it, but he desired to obtain from the Chancellor of the Exchequer a statement upon the position of this matter.

Mr. C. E. PRICE remarked that he had received strong representations against the proposal to relax the spirit duty in the case of hospitals.

Mr. MCKENNA said that he had given an answer to Sir P. Magnus on this question which he believed thoroughly satisfied all parties, the opponents of the proposal embodied in the clause standing in the name of Sir H. Craik, as well as the supporters of it.

WEDNESDAY, JULY 14TH.

Nerve Strain in the Navy.

Mr. RENDALL asked the Secretary to the Admiralty what provision had been made for the treatment of sailors in the Royal navy who had been disabled by nerve strain; what, if any, steps had been taken for the preliminary sifting of nerve-strain cases in the navy with a view to the diagnosis by general physicians as to whether they were such as in civilian life would be certifiable; whether any provision had been made for the treatment of uncertifiable nerve-strain cases arising in the navy in special departments of base hospitals so as to avoid the risk of their being unnecessarily associated with any suspicion of a taint of lunacy; and whether, in the event of any sailor having to be certified when discharged unrecovered from the navy, he would give an assurance that such sailor should not be certified by an asylum doctor and should have the civilian's right of being seen by a magistrate.—Mr. MACNAMARA replied: Suitable accommodation and treatment are provided in our base naval hospitals for all cases of nerve strain and neurasthenia. All such cases are naturally most carefully diagnosed before any decision is come to as to whether they are certifiable or not. Certification of all cases is carried out by our own naval medical officers and not by an asylum doctor. No man so certified can, however, be sent to any asylum until his discharge has been approved by two Lords of the Admiralty. All cases of insanity attributable to the service and all men who have length of service to their credit are treated in our own naval asylum and not in a general asylum.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

COURT, C., M.B., C.M. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Kirkham District of the county of Lancaster.

DUNLOP, J. BEATTIE, M.B., B.C. Cantab., has been appointed an Honorary Physician to the Bradford Royal Infirmary.

FLITCROFT, T. E., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Leigh District of the county of Lancaster.

GRIFFITHS, D. R. T., L.S.A., L.M.S.S.A. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the New Quay District of the county of Cardigan.

LAMB, CHARLES JOHN, L.D.S.R.C.S. Eng., has been appointed Dental Surgeon to the Scattered Homes by the St. Germans (Cornwall) Board of Guardians.

LITTLE, FRANCIS ERNEST, L.R.C.P. Edin., M.R.C.S., has been appointed Deputy Acting Medical Officer of Health for Teignmouth.

OGILVIE, WILLIAM M., M.B., C.M. Aberd., has been appointed Medical Superintendent to the Ipswich Borough Mental Hospital.

ORR, THOMAS, M.D. Glasg., has been appointed Medical Officer of Health and School Medical Officer for the Borough of Ealing.

SAMUEL, JAMES ALBERT, M.D. Leipzig, L.S.A., has been appointed Deputy Acting Medical Officer for the Workhouse by the St. Germans (Cornwall) Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BATH, WINSLEY SANATORIUM FOR CONSUMPTION.—Assistant Resident Medical Officer. Salary £250 per annum, with board, residence, and laundry.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, attendance, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Junior House Surgeon. Salary £100 per annum, with residence, board, &c.

BIRMINGHAM UNIVERSITY, FACULTY OF MEDICINE.—Female Demonstrator in Anatomy for Women Students.

BOLTON INFIRMARY AND DISPENSARY.—Second House Surgeon. Salary £200 per annum, with apartments, board, and attendance.

BRISTOL GENERAL HOSPITAL.—House Physician for six months. Salary at rate of £150 per annum, with board, residence, &c.

BURY INFIRMARY.—Senior and Junior House Surgeons. Salary £250 and £150 per annum respectively, with board, residence, and washing.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—House Surgeon for six months. Salary at rate of £140 per annum, with board, residence, and laundry.

CROYDON COUNTY BOROUGH.—Assistant Medical Officer of Health and Assistant School Medical Officer. Salary £350 per annum.

CROYDON MENTAL HOSPITAL, Upper Warlingham, Surrey.—Second Assistant Medical Officer. Salary £250 per annum, with board, lodging, and laundry.

DERBY COUNTY ASYLUM, Mickleover.—Locum Tenens. Salary £6 6s. per week, with board, &c.

DUBLIN, ROYAL COLLEGE OF SURGEONS IN IRELAND.—Professor of Chemistry, Professor of Physics, and Professor of Pathology.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—House Physician for five months and House Surgeon for three months. Salary at rate of £75 per annum each, with board, residence, and washing.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £150 per annum, with board, apartments, and washing.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—House Surgeon. Salary as agreed, with board, residence, and laundry.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.—Assistant Casualty Medical Officer and House Surgeon, unmarried, for six months. Salary £30 each, with board, residence, &c.

KINGS LYNN, 1st SOUTH MIDLAND MOUNTED BRIGADE FIELD AMBULANCE.—Three Medical Officers for 2nd Line (Territorial).

LEAMINGTON SPA, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—Second Resident Medical Officer. Salary £200 per annum, with board, residence, and laundry. Also Locum Tenens Medical Officer.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident Medical Officer, unmarried, for six months. Salary at rate of £100 per annum, &c.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury.—Resident Medical Officer. Salary £100 per annum, with board and residence.

NEWCASTLE-UPON-TYNE, UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.—Demonstrator of Anatomy. Salary £250 per annum.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Surgeon. Salary £250 per annum, with board, residence, and washing.

ROYAL EYE HOSPITAL, St. George's-circus, Southwark, S.E.—House Surgeon. Salary £100 per annum, with board, apartments, and washing.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £100 per annum respectively, with apartments, board, lodging, and washing.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN (GYNÆCOLOGICAL AND MATERNITY DEPARTMENTS).—Female Junior House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon and Assistant House Physician. Salary £100 per annum, with board and residence.

THETFORD, NORFOLK.—Medical Officer for 2/1st Highland Mounted Brigade Field Ambulance. Also Two Medical Officers for Depôt, Inverness. Also Medical Officers for 2/3rd East Anglian Field Ambulance.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon. Salary £150 per annum, with rooms, board, and washing.

WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anæsthetist. Salary £150 per annum, with board, residence, and laundry.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary at rate of £200 per annum, with board, apartments, and laundry.

WEST BROMWICH AND DISTRICT HOSPITAL.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £120 per annum respectively, with residence, board, and laundry.

WEST HAM AND EASTERN GENERAL HOSPITAL.—Resident Medical Officer. Salary £160 per annum. Also House Physicians and House Surgeons. Salary £120 and £100 per annum respectively, with board, residence, and washing.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Junior House Surgeon. Salary £150 per annum, with board, apartments, and washing.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Builth, in the county of Brecon; and at Dronfield, in the county of Derby.

Births, Marriages, and Deaths.

BIRTHS.

DEANE.—On July 11th, at Wragby, Lincolnshire, the wife of Temporary Lieutenant W. Deane, R.A.M.C., of a daughter.

KEIR.—On July 8th, at Whitley, Melksham, the wife of Ivan C. Keir, M.D. Edin., Captain, R.A.M.C.(T.), of a daughter.

RIDOUT.—On July 5th, at St. Elmo, Clarendon-road, Southsea, to the wife of Major C. A. S. Ridout, R.A.M.C. (T.), a daughter.

VERDON-ROE.—On July 8th, at West-hill, Wandsworth, S.W., to Dr. and Mrs. Verdon-Roe, a son.

MARRIAGES.

EGAN—WALL.—On July 1st, at the Roman Catholic Church, Harrow, Captain W. Egan, R.A.M.C., to Norah Wall, of The Croft, Hindes-road, Harrow.

HAYCRAFT—HERDSMAN.—On 9th July at Holy Trinity Church, Penge, Guy Fleetwood Haycraft, M.R.C.S., L.R.C.P. Lond., Lieutenant, R.A.M.C.(T.F.), to Dorothy Herdsman, B.A. (London University), daughter of Mr. and Mrs. Herdsman, of Newlands Park, S.E.

KELLOCK—BROOKE.—On July 10th, at Christ Church, Lancaster-gate, by the Rev. Alfred Gill, assisted by the Rev. W. H. Harvey Royse and the Rev. H. N. Bate, vicar of the parish, Thomas Hubert Kellock, M.C., F.R.C.S., Captain, R.A.M.C.(T.F.), of 2, Upper Wimpole-street, to Margaret, youngest daughter of Mr. and Mrs. Alexander Brooke, 34, Craven Hill-gardens, W.

MACGILLYCUDDY—WOOLER.—On July 12th, at St. Swithun's Bournemouth, Adolph Richard Neill MacGillycuddy, Lieutenant, R.A.M.C., to May Eleanor Lloyd Wooler, only daughter of the late R. G. Wooler, Esq., of Wolsingham, co. Durham.

MAUGHAN—HULSE.—On July 6th, at Christ Church, Mayfair, Captain John St. Aubyn Maughan, R.A.M.C., and Lilian Edith, younger daughter of the late Joseph Whitworth Hulse and of Mrs. Stanley Furber, of Devonshire-terrace, Hyde Park, W., and Winslow, Bucks.

MIÉVILLE—HORN.—On July 7th, at St. Peter's Church, Lee, George Christian Blake Miéville, M.R.C.S., L.R.C.P. Lond., to Muriel Gordon, elder daughter of the late Samuel Horn and of Mrs. Horn, of Lee, S.E.

SYMONDS—POULTON.—On July 7th, at St. Giles Church, Oxford, Charles Putnam Symonds, Lieutenant, R.A.M.C., to Janet Mary Palmer, youngest daughter of Professor E. B. Poulton, F.R.S., and Mrs. Poulton.

TONKS—EVANS.—On July 10th, at St. Saviour's Church, Raynes Park, John Wilson Tonks, F.R.C.S. Eng., M.B., B.C., to Ellinor May Evans, youngest daughter of Mrs. A. M. Evans, of Gordon-terrace, Cardigan.

DEATHS.

BLUE.—On July 11th, Charles Blue, M.B., of Lewisham-park, S.E., aged 46 years.

FERRABY.—On July 8th, in Edinburgh, Dr. H. P. Ferraby.

GWYNNE.—On July 9th, killed in action in Flanders, Captain John Fitzgerald Gwynne, R.A.M.C.

HARWOOD.—On July 8th, at Southsea, John Gasson Harwood (retired), Colonel, Army Medical Staff, in his 59th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A BRITISH DEPENDENCY WITHOUT A HOSPITAL.

THE Turks and Caicos Islands form a dependency of the Colony of Jamaica, from the north-west of which they are distant about 420 miles. They have an area of about 170 square miles. According to the census of 1911 the population was 5615 (2505 males and 3110 females), composed of 286 whites and 5329 coloured. Of these, 1279 reside in the Turks Islands and 4366 in the Caicos Islands. During the year 1914 there were 192 births, or 34 per 1000, and 112 deaths, or 20 per 1000. The general state of the public health was good, and no diseases of a zymotic character were reported. The rainfall recorded during the year was 33·94 inches. November was the wettest month, with 9·58 inches, and June the driest, when only 0·47 inch were recorded. The coolest and warmest months were January and July, with mean temperatures of 69·1° and 89·8° respectively. The lowest temperature for the year, 62°, occurred on Feb. 28th, and the highest, 92°, on Sept. 14th.

The Commissioner of the Dependency (Mr. G. Whitfield Smith) writes in the course of his annual report: "There is no hospital or asylum. Cases of lunacy are fortunately very rare, and, when occurring, are sent to the lunatic asylum at Jamaica and maintained there at the cost of the Dependency. Although undoubtedly cases of illness frequently occur which would be the better for treatment at a properly equipped hospital, yet the scattered nature of the population throughout the islands of the Dependency, and the difficulties which exist in the way of getting sick persons from outlying districts to Grand Turk in small open boats (often a distance of 50 to 60 miles) render the question of establishing such an institution one of doubtful general utility. This matter is, however, receiving consideration with a view to providing a small emergency hospital for the treatment of infectious diseases, serious cases of illness where home nursing is impossible, and such cases as may occur among seamen landed from vessels in harbour."

NECESSITOUS LADIES HOLIDAY FUND.

To the Editor of THE LANCET.

SIR,—Much generous and self-sacrificing help is being given to other charities to meet the need this awful war has involved, whilst the poor ladies are likely to be overlooked. And yet no class has suffered so pitifully in the war as that of the poorer gentry through loss of work, and therefore of money.

May I be allowed to appeal, then, for help to send away hospital nurses, typists, secretaries, governesses, clerks, musicians, actresses, and ladies of gentle birth engaged in other professions, who without the possibility of earning in the summer months are left in the city, exposed to the sufferings attendant on poverty. In some cases the poor ladies are quite beyond a holiday. For these I might supply relief in the form of food, medicine, or clothing. I plead, then, for these, our unfortunate sisters, for the sick, the elderly, and broken.

All contributions sent to me at the address given below will be gratefully acknowledged and distributed.

I am, Sir, yours faithfully,
CONSTANCE BEERBOHM.

48, Upper Berkeley-street, London, W.

ACCOMPLISHMENTS (?)

To the Editor of THE LANCET.

SIR,—In his account of the case of loss of personality from "shell shock" in THE LANCET of last week Dr. A. Feiling says on p. 65: "This, however, was the only accomplishment which he had retained from his previous life." Is it fair to ask whether reading and writing are not accomplishments retained from his previous life?

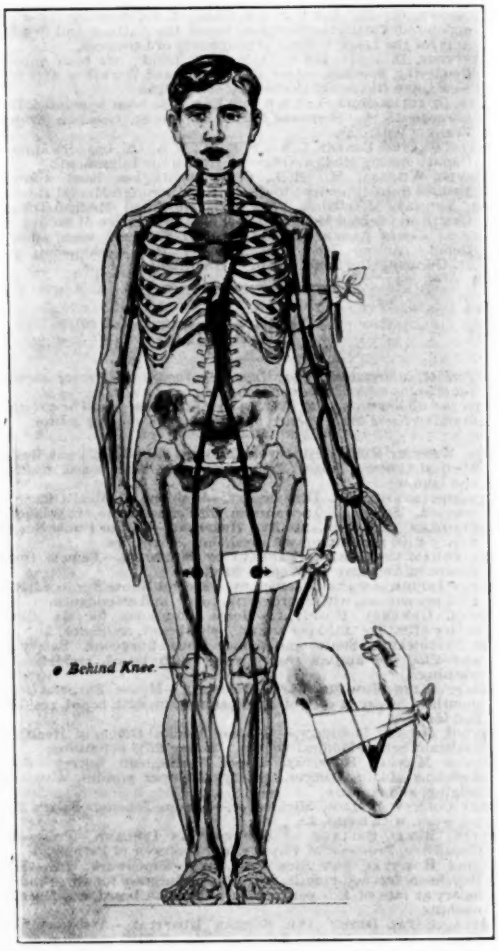
I am, Sir, yours faithfully,
July 12th, 1915. H.

THE SANITARY INSPECTORS' ASSOCIATION.

THE meeting of the Devon and Cornwall branch of the Sanitary Inspectors' Association was recently held at Teignmouth. There was a good attendance. Mr. Bonham read an interesting paper on the Sanitary Oversight of Military Camps and Billets, in which he stated that the Local Government Board had suggested that, as far as could be arranged, all the food used for military purposes should be inspected by the local sanitary inspectors.

IMMEDIATE FIRST AID AT THE SEAT OF WAR.

A KNOWLEDGE of even the most elementary principles of first aid on the part of himself or his comrades may often be the means of saving a soldier's life, and Major Maclure, V.D., late President of the Volunteer Ambulance School of Instruction, is to be congratulated on his efforts to solve the problem of imparting such knowledge quickly and usefully. He has issued a four-page pamphlet, Instructions for Rendering Immediate Aid, giving clear and concise directions for dealing with emergencies likely to happen in war, the first page having printed upon it an outline of the human form showing the pressure spots for stopping



bleeding. A similar diagram of large size, and showing the skeletal framework as well as the main arteries, has been printed on canvas for use as a wall diagram. This is reproduced on a small scale in the accompanying illustration. Of the pamphlets 120,000 have been distributed to some 240 regiments and have probably been the means of saving many lives. Donations by those who wish to help, by enabling more pamphlets to be distributed gratuitously, should be sent to Major Maclure, 26, Dennington Park-road, West Hampstead, N.W.

THE TORQUAY RED CROSS HOSPITALS.

A STRAWBERRY fête was recently held at Torquay, and as a result the sum of £280 has been divided amongst the four Red Cross hospitals in Torquay.

THE RECENT ELECTIONS TO EPSOM COLLEGE.

Mrs. James Walsh, 44, Worthing-road, Southsea, widow of Fleet-Surgeon Walsh, H.M.S. *Good Hope*, wishes to express her most grateful thanks to all who so kindly gave their votes, support, and sympathy to her son, Raymond Neville, in the June election, 1915, for Foundation Scholarships for Epsom College, in which he was third from the top among the successful candidates.

FIBROLYSIN IN URETHRAL STRICTURE.

Dr. R. R. Rentoul, 78, Hartington-road, Liverpool, will be much obliged to anyone who will kindly send him his results of the treatment of urethral stricture by fibrolysin.

C. S.—Medical men desirous of offering their services in a restricted or local capacity, and not for general service anywhere, should address their applications to the Deputy Director of Medical Services at the headquarters of the command in which they live. "C. S." is accordingly advised to address his application to the D.D.M.S., Headquarters Eastern Command, Horse Guards, Whitehall, S.W.

Dr. Robert Cantemerle, Amsterdam, has not sent an address where communications can be forwarded to him.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M. Clinical Lecture.

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1915, which was completed with the issue of June 26th, were given in THE LANCET of July 3rd.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1915 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

(The rate for the United Kingdom will apply also to Medical Subordinates in India whose rates of pay, including allowances, is less than Rs.50 per month.)

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—Messrs. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 9.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 14th, 1915.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. in Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July 8	29·796	W.	0·05	73	66	58	57	59	Cloudy
,, 9	29·830	N.W.	...	125	71	57	54	60	Cloudy
,, 10	29·768	W.	...	128	71	55	55	60	Fine
,, 11	29·920	W.	...	85	65	58	56	59	Cloudy
,, 12	30·170	W.	...	128	69	57	57	61	Cloudy
,, 13	29·830	S.W.	...	102	66	58	57	61	Cloudy
,, 14	29·870	W.	...	127	68	53	55	60	Fine

The following magazines, journals, &c., have been received:—American Journal of Medical Sciences, Surgery, Gynæcology and Obstetrics, Medical Review of Reviews, Biometrika, West London Medical Journal, Journal of Tropical Medicine and Hygiene, Annales de l'Institut Pasteur, Journal of Comparative Pathology and Therapeutics, Archives of Radiology and Electrotherapy, Cleveland Medical Journal, Maryland Medical Journal, Public Health, Biochemical Journal, Dublin Journal of Medical Science, and Review of Neurology and Psychiatry.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Australian Book Co., Lond.; *Answers*, Editor of; Dr. T. Cuming Atkin; Professor Giulio Alessandrini, Rome; Mr. A. S. Anderson, Edinburgh; A. M. B.

B.—Mr. F. Sherman Bigg, Lohd.; Board of Education, Secretary of; Major George N. Biggs, R.A.M.C.(T.); Miss Ballance, Lond.; Lieutenant-Colonel R. J. Blackham, R.A.M.C., Simla; Messrs. W. H. Bailey and Son, Lond.; Mr. C. Boulangé, Paris; Bristol Myers Co., New York; Messrs. Boulanger, Dausse and Co., Paris; Captain J. A. Bennett, R.A.M.C., Lond.; Dr. S. J. McC. Bradshaw, Dalkey; Bibliothèque de la Guerre, Lyon; Dr. H. D. Bishop, Guernsey; Birmingham University, Secretary of; Messrs. F. P. Baker and Co., Lond.; Birmingham General Hospital Secretary of; Messrs. W. Browning and Co., Lond.; Dr. Alfred G. Bateman, Lond.; Mr. H. Bucknill, Carlisle; *British Food Journal*, Lond.

C.—Lieutenant E. W. Carrington, R.A.M.C., France; Dr. J. Robertson Carver, Knutsford; Messrs. J. and A. Churchill, Lond.; Dr. Robert Cantemerle, Amsterdam; Cosham Memorial Hospital, Kingswood, Secretary of; Convalescent Homes Association, Lond., Secretary of; Dr. G. Crichton, Lond.

D.—Messrs. W. Dawson and Sons, Lond.; Dorland Agency, Lond.; Dr. Dickinson, Lond.; Dottor Giuseppe D'Agata, Firenze; Messrs. Down Bros., Lond.; Derby County Asylum, Mickleover, Clerk to the; Messrs. S. Deacon and Co., Lond.; Dowsing Radiant Heat Co., Lond.; Dr. A. Degroodt, Lyme Regis.

E.—Dr. R. C. T. Evans, Herne Bay; Epsom College, Headmaster of.

F.—Dr. Duncan Forbes, Brighton; Dr. P. Fildes, Lond.; Messrs. Fletcher, Fletcher, and Co., Lond.; Dr. R. W. Fisher, Belgaum.

G.—Dr. Major Greenwood, Lond.; Dr. C. W. Graham, Carlisle; Messrs. Gale and Co., Lond.; Messrs. W. Green and Son, Edinburgh; Mr. H. Gardiner, Lond.

H.—Professor Walker Hall, Bristol; Mr. J. T. Hislop, Wrexham; Messrs. Hempsons, Lond.; Mr. A. Henley, Lond.; Hoffmann-La Roche Chemical Works, Lond.; Mr. J. Hague, Northwich; Dr. H. P. Hacker, Kuala Lumpur; Mr. M. P. L. Harker, Brandon, Manitoba; Mr. A. Hill, Leicester.

I.—Mr. Abd El Aziz Ismail, Cairo.

J.—Mr. H. Jones, Dorchester; Jessop Hospital for Women, Sheffield, Secretary of.

K.—Messrs. H. S. King and Co., Lond.; Kenny's Advertising Agency, Dublin; King's College Hospital Medical School, Secretary of; Messrs. J. G. King and Son, Lond.; Mr. Christopher Kempster, Lond.

L.—Messrs. Lever Bros., Port Sunlight; Messrs. E. and S. Livingstone, Edinburgh; Leeds Public Dispensary, Secretary of; Mr. P. J. Liston, Penang; Mr. James Lucas, Midhurst; Local Government Board, Secretary of; Messrs. S. Lendrum and Co., Lond.; London Press Exchange; Fleet-Surgeon G. Ley, R.N., Haslar.

M.—Mr. A. S. Matthews, Bath; Dr. J. C. McWalter, Dublin; Dr. Alex. Morison, Lond.; Mr. R. Morison, Lond.; Fleet Surgeon J. Martin, R.N., Malta; Maltine Manufacturing Co., Lond.; Messrs. Mertens and Co., Lond.; Messrs. Mawson and Co., Lond.; Dr. J. L. Martin, Chelmsford; Mr. H. McAvoy, South Bank; Mr. W. T. Makings, Lond.; Dr. F. R. H. Meyrick, Brighton; Rev. Hugh H. Matthews, Lond.; Dr. J. C. Muir, Manchester; *Midland Counties Herald*, Birmingham; Mr. R. More, Glasgow; Mr. A. J. Mathison, Lond.; Dr. Mossop, Maldon.

N.—Nottingham General Hospital, Secretary of; National Association for the Prevention of Consumption and Other Forms of Tuberculosis, Secretary of; New York Pharmaceutical Co.; Mr. F. Newland-Pedley, France; National Clean Milk Society; National Health Insurance Committee (England), Lond.; North-West Frontier Province, Peshawar, Chief Medical Officer of; Dr. David Newman, Glasgow; Dr. J. T. C. Nash, Norwich; Mr. Arthur J. Nyulasy, Perth, Australia.

O.—Sir Thomas Oliver, Newcastle-on-Tyne; Dr. John O'Conor, Buenos Aires; Our Dumb Friends League, Lond.

P.—Dr. F. W. Price, Lond.; Dr. W. A. Potts, Edgbaston; Protestant Press Bureau, Ilford.; Panel Committee for the County of London.

Q.—*Queensland Government Gazette*, Brisbane.

R.—Dr. R. Rentoul Liverpool; Royal College of Physicians of Ireland, Registrar of; Royal Society of Medicine, Secretary of; Royal Devon and Exeter Hospital, Exeter, Secretary of; Messrs. Richardson and Co., Lond.; Royal Cornwall Infirmary, Truro, Secretary of; Mr. D. J. Reynolds, Plattsmouth, Nebraska; Lieutenant H. M. Rainsford, R.A.M.C., Lond.; Miss Robertson, Aberdeen; Dr. T. Rhodes, Melbourne; Reuter's Telegram Co., Lond.; Mr. C. K. Rudge, Bristol; Sir Leonard Rogers, Calcutta.

S.—Mr. R. H. Spurrier, Newport; Messrs. G. Street and Co., Lond.; Messrs. Simpkin Marshall, Hamilton, Kent, and Co., Lond.; Messrs. Stephenson, Blake, and Co., Lond.; Lieutenant J. Saffley, R.A.M.C., Rumbling Bridge; South Devon and East Cornwall Hospital, Plymouth, Secretary of; Miss S., Farnham; Mr. C. Stephens, Norfolk; Lieutenant-Colonel Henry Smith, Amritsar; Dr. C. P. Stanaghan, Foxton; Silvertown Lubricants, Lond.; Dr. T. H. Suffern, Lond.; Swansea Hospital, Secretary of; *St. Bartholomew's Hospital Journal*, Lond., Editor of.

T.—Mrs. Alec Tweedie, Lond.; Dr. H. L. Tidy, Netley Abbey; Mr. L. Thatcher, Edinburgh; Mr. F. Taylor, Lond.; Trinity College, Dublin, Registrar of.

U.—University of London, Principal of.

V.—Messrs. J. W. Vickers and Co., Lond.; Mr. S. B. Velayudham, Wynad, India; Médecin Aide Major Henri Vignes, Paris.

W.—Mr. A. E. M. Woolf, Woking; Dr. Arthur C. Wilson, Formby; Messrs. Wilkes and Co., Lond.; War Office, Lond.; Wounded Allies Relief Committee, Lond.; Mr. A. Wilson, Lond.; W. S. W.; Messrs. J. Wright and Sons, Bristol; Warneford, Leamington, &c., General Hospital, House Governor of; Mr. Faulder White, Lond.; Mrs. Walsh, Southsea; Dr. L. Wainwright, Folkestone; Wellcome Bureau of Scientific Research, Lond.

Letters, each with enclosure, are also acknowledged from—

A.—Dr. G. N. Adams, Porthcawl; Messrs. Armour and Co., Lond.; Anderson's College of Medicine, Glasgow, Treasurer of; Aberdeen University, Secretary of; Messrs. T. and M. Armstrong, Lond.; A. M. L.; A. D.; A. R.; Dr. J. Andrew, Coatbridge.

B.—Dr. W. M. Buchanan, Glasgow; Messrs. T. B. Brown, Lond.; Messrs. Bedford and Co., Lond.; Dr. H. Buxton, Wallasey; Dr. D. Barjorjee, Ahwaz, Persian Gulf; Messrs. A. Bishop, Lond.; Dr. H. M. Boshouwers, Santiago; Messrs. W. V. Bowater and Sons, Lond.; Sister Bowden, Buxted; Barnwood House Hospital, Gloucester, Medical Superintendent of.

C.—Mrs. E. Chapman, Sotwell; Mr. A. M. Connell, Sheffield; Messrs. Crossley and Co., Lond.; Church Army, Lond., Secretary of; Major J. H. Chittenden, R.A.M.C., Ashford; Mr. F. W. Clarke, Choriton-cum-Hardy; Dr. T. Carruthers, Kilbarchan.

D.—David Lewis Northern Hospital, Liverpool; Mrs. Duranty, Reigate; Derby Corporation, Clerk to the; Messrs. Dowie and Marshall, Lond.

E.—Dr. C. T. Ewart, Woodford Bridge; E. W. S.; E. M. C.; Dr. H. A. Ellis, Middlesbrough; E. C.

F.—Major E. G. Ffrench, R.A.M.C., Lond.; Dr. W. Fearnley, Ackworth; Dr. K. Falconer, Castle Eden.

G.—Dr. S. Gill, Formby; Messrs. Gilyard Bros., Bradford.

H.—Dr. B. S. Hyslop, Settle; Mr. P. E. Hoyland, Rotherham; Mr. F. E. Henbeck, Mountain Ash; Mr. F. Hall, Grindleton; Messrs. A. Heywood and Son, Manchester; Mr. P. Harper, Lond.; Messrs. Humphreys, Lond.; Hull Royal Infirmary, Secretary of; Hyderabad Medical School, Principal Medical Officer of; Mr. J. Hutcheon, Manchester; Messrs. J. Haddon and Co., Lond.; Hereford County and City Asylum, Clerk to the; Hulme Dispensary, Manchester, Secretary of.

I.—International News Co., Lond.

J.—Mr. E. A. John, Haverfordwest; J. J. W.; J. S.

K.—Mr. F. Kilner, Lond.; Mr. S. Kodachi, Tokio.

L.—London Temperance Male and Female Nurses, Secretary of; Lieutenant-Colonel Sir W. Leishman, R.A.M.C., Leatherhead; London School of Massage, Secretary of; Messrs. Lee and Nightingale, Liverpool; Dr. A. M. Love, Omagh; Locum, Talyllyn.

M.—Dr. W. Moore, Melbourne; Messrs. J. Menzies and Co., Glasgow; Mr. T. MacLaughlin, Ballywillan; Messrs. Menzies and Co., Edinburgh; Mr. J. McOscar, Buxton; Dr. J. W. Scott Macfie, Accra.

N.—New Oxydol Products, Ltd., Lond.

O.—Dr. F. M. G. Ozorio, Hong-Kong.

P.—Mr. C. E. Pronger, Harrogate; Messrs. Parke, Davis, and Co., Lond.; Pendyffryn Hall, Penmaenmawr, Secretary of; Messrs. Porteous and Co., Glasgow; Messrs. Parker and Son, Oxford; Price's Patent Candle Co., Lond.; Dr. A. J. S. Pinchin, Tintagel; Dr. E. W. Perkins, Lond.

Q.—Queen's Hospital, Birmingham, Secretary of.

R.—Mr. J. D. Rhodes, Lond.; Mr. A. E. Rouse, Worthing; R., Higham Park; Lieutenant A. A. Rutherford, R.A.M.C., Rouen; Royal Albert Institution, Lancaster, Secretary of.

S.—Lieutenant H. W. Sykes, R.A.M.C., Meldon; Smedley's Hydropathic Co., Matlock; Mr. M. Hamblin Smith, Portland; Messrs. J. P. Segg and Co., Lond.; Mr. M. Style, Moreton-in-Marsh; Stirling Royal Infirmary, Secretary to the; Messrs. W. H. Smith and Son, Harrogate; Mr. F. G. Shaw, Lond.

T.—Mr. E. Thorp, Darlington; Tiverton Hospital, Matron of; Mr. W. Thorburn, Manchester; Tunbridge Wells General Hospital, Secretary of; Taunton and Somerset Hospital, Taunton, Secretary of.

W.—Dr. J. D. Wynne, Clonmel; Wrexham Infirmary, Secretary of; Waterbury Chemical Co., Des Moines, U.S.A.; W. J. H.; Winsley Sanatorium for Consumptives, near Bath, Secretary of; Worcester County Council, Clerk to the; W. C. H.; West London Post-Graduate College, Secretary of.

EVERY FRIDAY. **THE LANCET.** PRICE SIXPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES and ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ... ... / Official and General Announcements / Trade and Miscellaneous Advertisements and Situations Vacant ...	Five Lines and under £0 4 0
	Every additional Line 0 0 6

Situations wanted: First 30 words, 2s. 6d.; per additional 8 words, 6d.
Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.
Special terms for Position Pages.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.
The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to advertisements; copies only should be forwarded.
Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.
Cheques and Post Office Orders (crossed "London County & Westminster Bank, Covent Garden Branch") should be made payable to the Manager Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to advertisements or subscriptions should be addressed.

Agents for the Advertisement Department in France—SOCIÉTÉ EUROPÉENE DE PUBLICITÉ, 10, Rue de la Victoire, Paris.